# Grand·Prix

## INTERNATIONAL

**F1 82/83**

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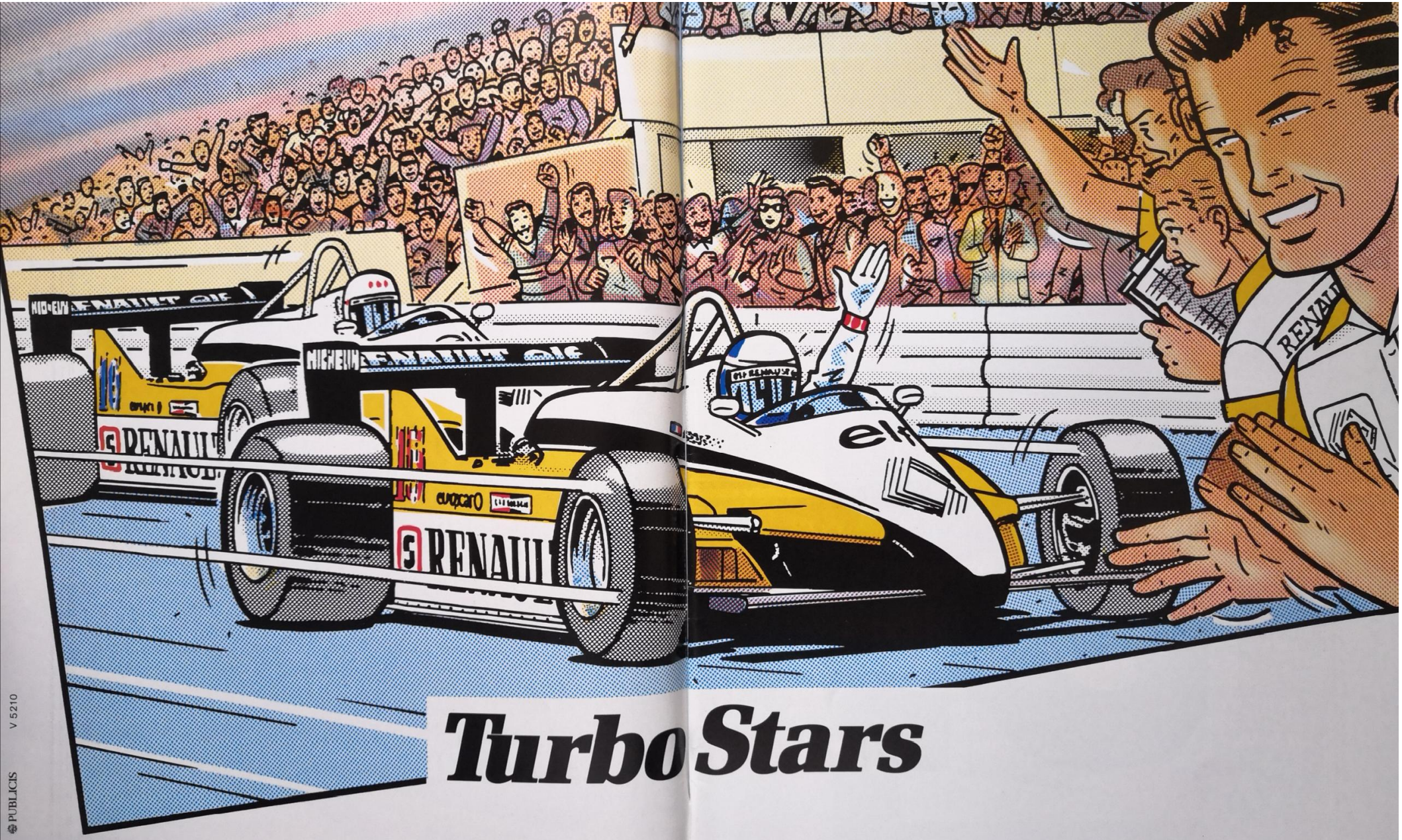


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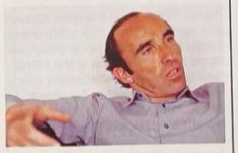
**FRANK WILLIAMS: THE FEAR OF FALLING**



*Having made world champions of Alan Jones and Keke Rosberg, Frank Williams might rest of his laurels and retire a rich man. That's not his way. He unceasingly questions the future and the winning still means as much to him. If not more. Keith Botsford went to Didcot to talk to him.*

**N° 59 (BRASIL) WILL BE ON SALE THE 17th MARCH SUBJECT TO THE FISA CALENDAR**

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**RACING DOWN UNDER**

*Alain Prost and Jacques Laffite finished one-two in the Australian Grand Prix, run at Calder as a Formula Pacific race. Two years from now, the real thing may be there.*

PAGE 24

**DISCOVERING THE NEW FORMULA ONE**

*With the help of SERA-CD, Didier Braillon seeks to explain why FISA's decision on November 3rd, killing off ground effect, is fundamentally a sound one. Sketches and e lementary explanations are offered. After which drivers, constructors and engineers have their say some of them still in shock.*

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**THE SEASON IN PICTURES**

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**ASSET ON ASSET**

*For some years now, his pictures have dominated our pages. The camera hides the man, who is shy and secretive. As with most exceptional cameramen, for him photography is above all an art.*

PAGE 52

**BERNARD ECCLESTONE: FUTURE SHOCK**

*It's plain that Formula One wouldn't have enjoyed its current growth if the FOCA boss hadn't put his hand to it. You might think it was at its apogee. Not Bernard Ecclestone. For him, the conquests have just begun.*

PAGE 56

**COCKPITS**

*A year has just ended. The close season brings a mass of statistics and results. Rather than write a dissertation on each team, Didier Braillon has made a brief and documented survey of the whole, a sort of mini-bible to 1982 to be consulted long after the memories have faded from all our minds.*

*A pull-out poster may be found in this issue between pages 36 and 37.* *Cover: Michel LECOMTE*

GRAND PRIX INTERNATIONAL is published by GRAND PRIX PUBLICATIONS LTD. 6, York Street, London W1. Telephone : (01) 486.12.77. Telex : 265709.

Publisher and Publishing Director : Michel A. Konig. Associate Publishers : Michel Hommell, Graham T. Rogers. Editor in Chief : Keith Botsford. Deputy chief Editor : Didier Braillon. Contributors : Xavier Chimits, Bob Constanduros, Mike Doodson, Maurice Hamilton, Jeff Hutchinson, Mario Luini, Giorgio Piola, Heinz Prüller. Holland : Marieke van der Drift. Spain : Luis Ramon Criado. Italy : Alessandro della Mora. Columnist : Nelson Piquet. Editorial Assistants : Martine Fréour, Annie Nédélec, Régis Lacroix. Artistic Directors : Marc Tournaire, Pascal Tournaire. Design Staff : Jean-Bernard Blanchet, Alain Convard, Jacques Gaoitti, Cédric Puyanchet. Photographers : Bernard Asset, First Line. DPPI, Lionel Froissart, John Blakemore. International Coordinator : Doreen Rogers. Financial Controller : Ivor Olley.

GRAND PRIX INTERNATIONAL is published in five languages : english, french, italian, spanish and dutch.

Printed by Avenir Graphique.

Distribution : Comag, Tavistock Road, West Drayton, Middx U877QE. London Office : 6 York Street, London W1. Advertising Manager : Robin Goodman. Subscription Manager : Sarah Redmond.
US Office : Long Beach Grand Prix Association, 110 W Ocean Bvd, Long Beach, CA 90802. Publishing Director : Chris Pook. Advertising Manager : Brian Turner. Subscription Manager : Jim Machelian.
Subscriptions USA : Change of address to GPI, 110 W Ocean Bvd, Suite A, Long Beach, CA 90802. USPS 597330. First class USD72.00, Second class USD52.00.
Subscriptions UK and Others (except USA) : Grand Prix International Subscriptions, Oakfield House, Perrymont Road, Haywards Heath, West Sussex RH16 3DH.
Editorial and Design : O.D.T., 41 avenue de Friedland, 75008 Paris.

*While his colleagues were out testing, Didier Pironi was continuing his remarkable recovery. It is still to soon to say when he may be back behind the wheel, but he has told visiting friends he certainly intends a comeback.*

## GPI IN GROUP C

Our special issue on the 1982 Le Mans 24 Hours which came out in English only was such a success that we have decided to continue 'Operation Endurance'.
A special issue containing a summing-up of Group C for this season, published in both English and French, will appear towards December 15th. There will be 112 pages in full colour, including the best pictures of the year and reports on Derek Bell, Jacky Ickx, Riccardo Patrese, Jean Rondeau, Thierry Boutsen and Aston Martin. Statistics will not be lacking and there will be the results of all the races: Monza, Silverstone, Nurburgring, Le Mans, Spa, Mugello, Mount Fuji, Brands Hatch and even Kyalami. Each will be accompanied by a brief text recalling each race.
Next season, GPI will do even better. Race after race GPI will follow Group C. From Daytona IMSA on January 30 through Kyalami on November 5 (the date to be confirmed), GPI will issue five special numbers. Our main ambition is to make these special issues of a graphic quality never seen before .

## THERE'S NOBODY HERE

A lot seems to have been happening to the Ensign and Theodore teams during the off season, but when GPI rang Theodore to find out the latest developments we got a long list of absentees: *"Sid Taylor, Teddy Yip, Jo Ramirez and Julian Renoles are all in Macao, Mo Nunn is in Venezuela and Nigel Bennett is in the Wind Tunnel"*, we were told. *"They'll all be back on November 29th"*.
Theodore and Ensign have joined forces, that much we know, the shaky finances of Ensign, Tony Southgate's departure from Theodore and a need to tighten belts and cut expenses on both sides led to the amalgamation in late October. But then, it seemed, everyone concerned went their separate ways and little more will be decided until the beginning of December. Both factories are currently still operating in England's Midlands, but it is expected that the meeting in December will slim down the operation.
At least Bennett is at work, defining next year's car, which will be called a Theodore N183. Sadly, the Ensign name is likely to disappear. Despite reports from France that he has joined Ligier, Mo Nunn has exercised an option on Roberto Guerrero's services for next year. Nunn's presence in Venezuela suggests that Johnny Cecotto, the former motor-cycle ace, might find his way into the second Theodore. One point that is especially advantageous is that Guerrero's sponsor Caribu, the jeans company, is big in both Venezuela and Guerrero's Colombia.

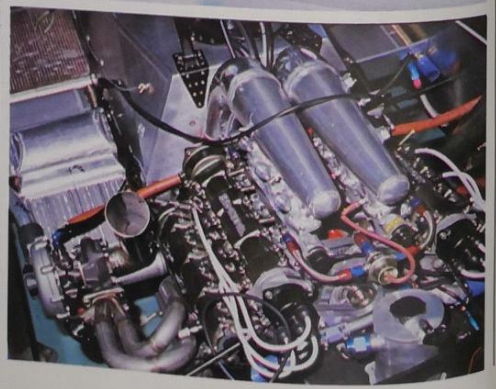
## THE HONDA RETURNS....

Ever since Honda pulled out of Grand Prix racing at the end of 1968, after two victories in four and half years, there have been rumours that the Japanese manufacturer, rating only fourth in the domestic commercial league, was on the point of returning.
In fact it is still only rumour, as Honda themselves have said that they will not make any statement about their plans until January. *"You know more in Europe about what we are doing than we do ourselves"* said Nobuhika Kawamoto, head of the R&D department, at the recent FAF F2 Grand Prix at Suzuka.

What is fact, is that a converted Spirit 201 F2 chassis will be running before Christmas fitted with a 1 500cc turbocharged version of the V6 F2 engine. The engine was delivered to Spirit's Slough workshops — owned by Honda — three days after the Suzuka finale in early November.
Without the turbocharger and intercoolers fitted, the 80 degree iron block V6 looks identical to the engine which has won seven European F2 races in the past two seasons. When it runs it will be fitted with a twin KKK turbochargers and will use a split intercooling system -50% air to air and 50% air to water. The engine has been bench-tested in Japan since last December and a full electronic management system has already been developed.
Rumours spread by Honda's Swiss based PR company suggest that a V10 engine is also under development and due to be tested shortly. This came as a complete surprise to Spirit whose experience is limited to V6 projects. However someone closely involved with one of Honda's future racing projects revealed that the engine which Spirit have is definitely *not* what Honda expect to race in Formula 1.
A year ago, Kawamoto, who was an engineer on the 1960s race team, did say that Honda's preference would always be for small bore multi-cylinder engines. He has admitted more recently that development exercices on V8 and V12, both turbo and normally aspirated, have been undertaken. Right up until Spirit announced their development programme in early October, it was thought that Honda would ultimately produce a V8 and this remains the firm favourite.

The V6 exercise is almost certainly to test that all the Honda-developed ancillary systems work. At the moment there has never been anything more than after-dinner discussion on a race programme for the engine. Naturally, Spirit are hopeful that the test programme will end in a go-ahead to produce a race car ready for the start of the European season. *"If it doesn't work, we'll be back in Formula 2"* said Spirit's John Wickham, *"and if it works well, I expect they will give it straight to Williams, so we can't win"*.

The Williams team have been in close contact with Honda for a couple of years and recently chief designer Patrick Head was at Honda's Tokyo R&D department. Winning is the only aspect of racing that the Japanese understand, coming a good second is worthless and the attraction of a major constructor using their engines will be hard to resist, although they are acutely aware that should the engine not work such an alliance would be forever disastrous.



Saturday, May 8, 1982. Zolder... Seven months already, only seven months...

Gilles has gone, but the memory of his improbable, impossible exploits is fresher than ever.

As the weeks and months go by, it is the more difficult to realize that we will no longer see the Ferrari defying the laws of physics, its wheels seeming to caress the track rather than cling to it. Other images spring to mind — his hands juggling with the steering wheel, seeming more at ease, certainly enjoying it more, with his hands crossed up controlling a wild oversteer than steady through a long corner — his eyes, seeming larger than life when glimpsed through his visor from the pits or through a telephoto lens on a corner where he had decided to push the limit back one more notch... eyes with a slightly wild look, it must be admitted, with an expression that now only Rene has, when he too comes back from the frontiers of the possible...

Then there was his frankness, his warmth hidden under a cover of indifference, his Quebec accent, delightful but so difficult that some of us who speak fluent French french preferred to speak to him in English... his rarely-told, so more treasured, stories of off-track adventures, literally, taking four-wheel drive vehicles up precipitous cliffs just for the challenge of getting them there, of flying his chopper, power-boating, or of the hair-raising snowmobile days...

Perhaps the most impressive hommage we heard came from a Brazilian journalist we bumped into the night of the accident in a grubby little cafe near Zolder where we were waiting for the news we already knew only too well.

That evening the Brazilian, a man of long experience not easily cowed, said slowly: "You know, my greatest regret today is that I hardly knew Gilles at all. I couldn't do anything about it. I was so impressed by him that I hardly dared talk to him...".

***D.B.***

## THE CHAMPION AT WORK

Anyone who thought that the new World Champion would rest on his laurels is wrong, Keke has been as busy during the off-season as during the racing season, in fact he's done a fair bit of racing too. Soon after he became World Champion, he went to the Nürburgring to race a Ford Capri in the 24 Hours, but unfortunately one of his co-drivers crashed the car while Keke was doing a programme at a nearby TV studio. Keke had another saloon car race in a BMW in the final round of the French production saloon car championship at Montlhery, but neither he nor 1983 Williams teammate Jacques Laffite had any luck there either. He finished fifth overall in the Donington rallysprint. Rumours that Keke would take part in both the Kyalami Nine hours and the Australian Grand Prix were without foundation, for Keke was otherwise involved.
Apart from a week testing Goodyear tyres at Daytona, the rest of Keke's time has been taken up almost exclusively with promotions, interviews and press

# MISTER CHIPS BITES BACK

**When the hoary-haired Jean-Marie Balestre, all chalk and flapping gown, faced his last class on November 3rd, his colleagues, in their noble, flowing gowns could ill conceal a shudder of anxiety. He had a whole year's work to catch up, he had to give his unruly pupils the keystone of the great arch he had so laboriously been constructing. And his subject! Oh dear, his subject! The most abstruse, the most abstract and obdurate material! The man was a controversial figure. As a teacher... well, the less said the better. His classroom manner certainly left something to be desired. The result, in the bare classrooms, had been havoc and squalor, squabbling boys and tears of anguish.**
**As for the students foregathered for this strange sort of farewell address in that squat, ugly amphitheatre on the Place de la Concorde, one had seen a better-behaved lot! Rich brats with too much money and no mercy, they were willing, nay eager, one and all, to sell Mummy and Daddy for a touch of gold. Alongside them sat some more modest but equally gnawed by that dread canker, ambition; they might be obscure, but that very obscurity had long since made of them practical revolutionaries, trotskyites, the Fidel Castros of FOCA.**
**And yet... It was something like a miracle. Mister Chips did his stuff, magisterially. His students were mesmerized, stunned, hypnotised. Not a peep from a one of them! And when he stepped down from the rostrum, the old man knew he'd won. Egad! he'd won! The big bullies of his class who'd given him so many painful hours were shorn lambs.**
**Not so stupid on their part. After all, they knew that despite the rather odd form of its presentation and the peculiar mannerisms of their prof, an uncommon man, the instruction they received was prodigiously correct and absolutely necessary. Hand in hand, the careworn figure and the sprightly students sipped champagne with claw and fang well concealed in a new pact of solidarity.**
**And when it comes to summing up, we don't mind complimenting that little band of goody-goodies for their behaviour. Nor awarding a laurel wreath, slightly used, to the man who shed light on their once-troubled spirits. Mister Chips had had to reinvent his subject from top to bottom. It was a dangerous, a controversial, a risky subject and he'd been at it since the year dot. But he did it. And if someone wants to give him a little parting present as a graduation memento for all concerned, for once we don't mind subscribing, ourselves. A modest sum, of course.**

**GPI**

work. Keke has taken on the job of World Champion with vigour, but for good reason : *"I may not be World Champion again,"* he told GPI, *"so I must make the best of it while I can"*. Privately he admitted that he wanted to make sure that everyone knew just who was World Champion racing driver in 1982. To that extent, he's been on tour with Marlboro to various European countries and will later be visiting the rest of the World of which he is champion. The Marlboro World tour also involves both John Watson and Niki Lauda. The new World Champion did have one day off early in November when his new Piper Cheyenne 2 was delivered. It's an eight-seater turbo prop which Keke will fly himself on occasions, although he will also employ a professional pilot.

## GPI BACKED ...

... Jonathan Palmer to win the British F3 championship in 1981, GPI backed Pierre Petit in the French F3 championship, with equally gratifying results.

It was in 1980 that Petit first starts a race: in an F3 championship race at Dijon and in a Bovy F3. He raced only four times that year, but drew attention to his qualities in a rain-swept Zolder where, despite his inexperience and his lack of funding, he managed to challenge the leaders.

Credit Agricole was then starting sponsorship and with their help, Pierre in 1981 bought Philippe Streiff's Martini MK31. He won the first race at Nogaro, which was only the fifth race of his career. He finished fifth in the French F3 championship.

A good result, and one to encourage the young driver from the Creuse to even greater ambitions for 1982. Credit Agricole again

came to his help, as did the oil company AVIA. Driving in a Ralt RT3 for David Price, Pierre won six of his eleven races, finished second three times and is consecrated French champion for 1982.

Having arrived at a decisive point in his career, next year Pierre will tackle Europe. To do that, he must move up to F2. So far, contacts with several teams and his sponsors are encouraging. Petit hopes to be at Silverstone on March 20, 1983 to attack the European F2 championship.

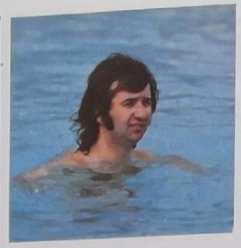
## CONGRATULATIONS !

Well done, Roberto ! Guerrero recently married his long-time companion, Katie Boster, in Los Angeles. GPI told you about it first : see page 27, Swiss GP !

## ATS-BMW : OFFICIAL

We suspected it throughout the latter half of the year, but in the off-season, it became official that a single ATS would be powered by a BMW turbo engine in 1983, and the driver would be Manfred Winkelhock. ATS will run only this single car, making an entirely German entry in Grand Prix racing for the first time since Gothard Mittar finished fourth in a Porsche at the Nürburgring in 1963. We shall overlook the fact that the team is based in England, the new car will be designed by an Austrian, Gustav Brunner, and the team manager is a New Zealander, Alastair Caldwell.

Only the one car will be run. *"We have neither the money nor the lack of sense to run either two new BMW-powered cars or one BMW-powered and one Cosworth-powered car,"* says Caldwell. The new car, designed by the English-domiciled Brunnar, is giving the team some problems. *"It is going well, but the rules have really thrown us,"* admits Caldwell. *"It has affected us more than most people because we have to build a new car. Not one component from the old car is going to be used on the new one, and we haven't a car to test. We'd like to stop and re-think the whole thing because of the new regulations, but we can't. It won't be the perfect car for the job now."*



## WHO GETS WHOM ?

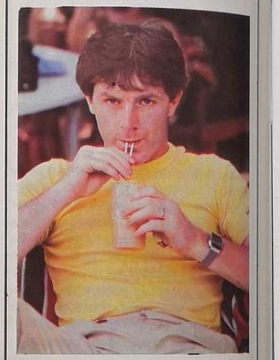
Another question arousing a feeble glimmer of interest among the cognoscenti is whether Bruno Giacomelli, that lovable clown of Formula One (imitations and piano accompaniment provided, free, during the drivers' strike), is going to move to Osella next year. As one wag remarked: *"Who will get whom first? Will the car* (the reference is to the Osella's notorious fragility) *get Bruno, or will Bruno get the car?"* (No explanations required) Our understanding is that Osella may not be running at all, and thus no problem need arise.

## DALY'S OPTIONS

No sooner had the F1 season ended than Derek Daly knew that he would not be driving for Williams in 1983; Jacques Laffite had taken his place. It came as a bit of shock to Derek, but he hasn't let the grass grow under his feet since then. He drove the GRID Group C car with considerable verve in the final round of the World Endurance Championship at Brands Hatch, took part in the Rallysprint at Donington and won the Speedstar'82 competition the next day — a combination of a Metro race, a special stage motor cycle scramble, autotest and cycle race. He also went out Phoenix, Arizona to drive in an Indy-style CART race.

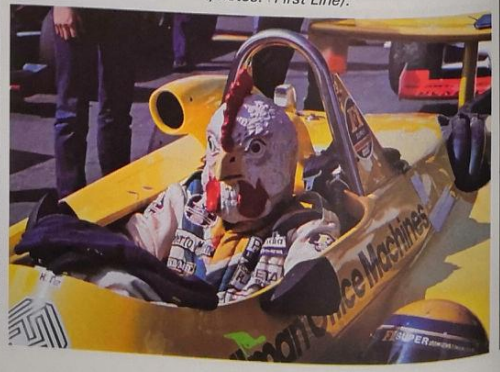
But what about Formula One? *"There's very little happening at the moment"*, Derek told us on the phone from Ireland in November. *"I'm over here doing a tour for my sponsor, P.R. Reilly and I'm hoping to get some money together to take to one of the four or five teams that I've approached. I've been speaking to McLaren, Tyrrell, Ligier, Toleman and Arrows, most of whom want money.*

*"I hope I get a Formula One drive, because I really feel that these new*

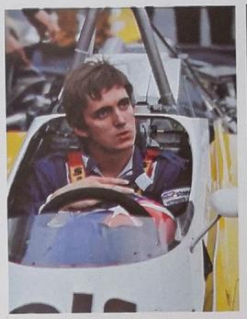


*regulations favour my style of driving, more than the wing car or ground effect ever did. I always did prefer the Formula Three, Two or Hesketh/Ensign type of car. But if I don't get anything, I expect I'll do some more CART racing. I've had two or three approaches since I did that race at Pheonix."*

*The Grand Prix of Macao, run to the Pacific Formula, saw the young Brazilian Roberto Moreno score another excellent win after a tremendous fight through the field, following a collision with Japan's Masahiro Hashemi. (photos: First Line).*







## CONCERNING SOUR GRAPES

Eddie Cheever is known to be super-happy with the result of his recent testing for Renault. Times fell, the young American was at ease, Renault covered him with warm, subtle Latin charm. All of which produced sour grapes in a certain English team where it was remarked that most beginnings were indeed promising. *"It will be much more interesting to hear Eddie on the subject after a few races experiencing the famous Renault reliability"*. True, but then the team in question finished even fewer races than Prost and Arnoux. Sour grapes should be swallowed in silence or spat out.

## STREIFF: THE TESTER TESTED

Philippe Streiff has an interesting distinguishing feature: he is even taller (6 ft 2 ins) than Eddie Cheever. But that is not why "la Régie" invited the AGS F2 driver to take part in the F1 tests recently at the Paul Ricard circuit. Gerard Larrousse is looking for a young test driver for next season and the fact that Streiff has been the first one invited seems to indicate that he is the most likely to win this job with its high prospects. Nevertheless, if time permits, Renault-Sport will test a second French driver during December, also at Paul Ricard.

## MARCH OR MARCH ?

*"Yes, I've heard the rumours too, it seems there might be something called BMW March Engineering racing cars for the Fabi brothers, it would be funny if there were two different works March teams on the grid, wouldn't it ?"* That was John MacDonald talking, the managing director of March Grand Prix. Rumours in Britain suggest that March boss Robin Herd might be forming his own Grand Prix team for the two Fabi brothers, Teo and Corrado, for whom he has enormous respect. BMW's close association with the March factory might lead to the supply of works turbo engines. The only problem would be Herd himself. He is much in demand in the United States to look after the many Indy cars sold there, and also has commitments with his Formula Two team.

Meanwhile, MacDonald's team is building up new cars for the 1983 season. They have been designed by two aerospace engineers, David Kelly and Tim Feast. As yet, no drivers have been signed, but MacDonald doesn't expect to run Raul Boesel again in 1983. He has been talking with Eliseo Salazar whom he ran in Britain's Formula One championship, but the Chilean is also in contact with both Toleman and Tyrrell so little is settled on that front.

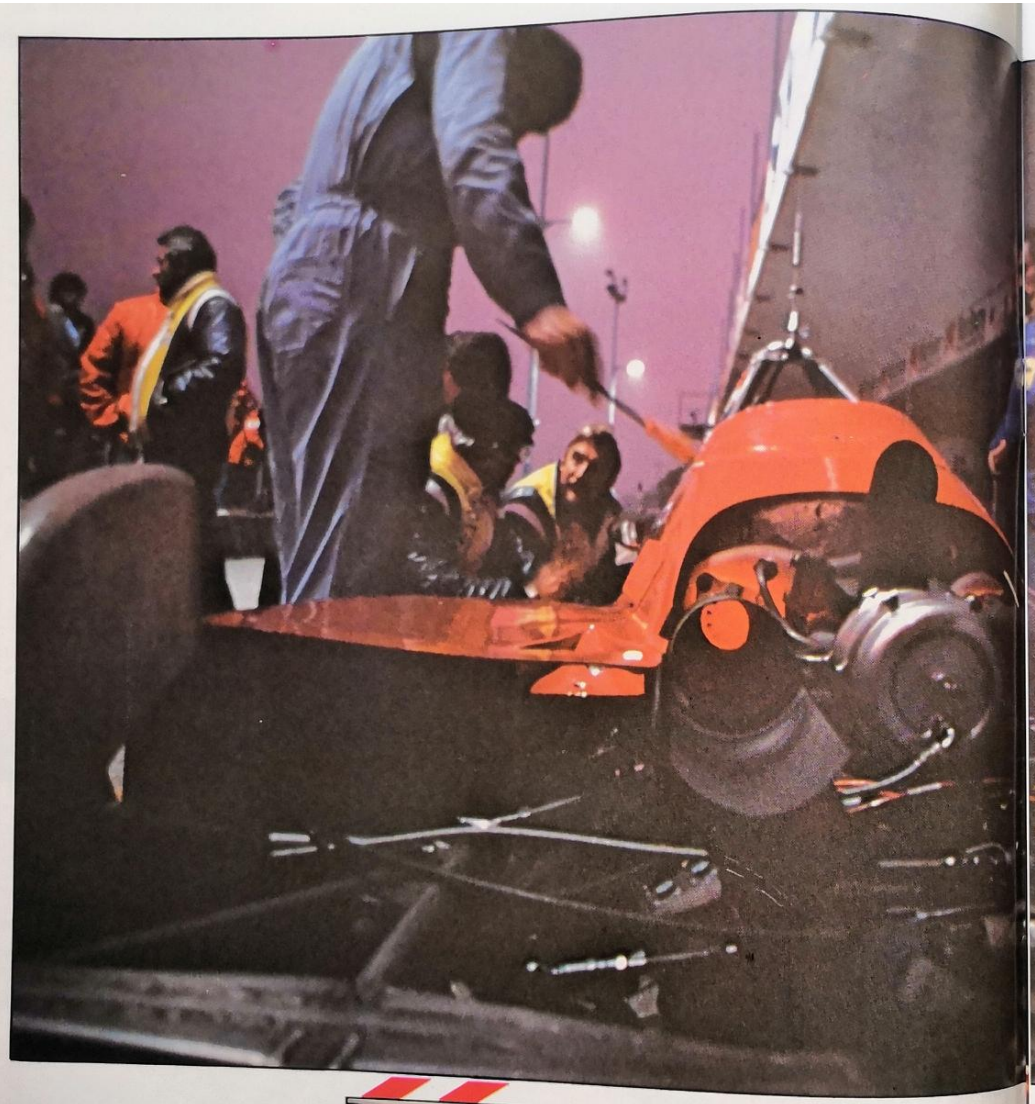
## THE ANCIEN REGIME

Sheridan Thynne, that thin lipped gentleman with glasses one sees inhabiting the Williams motor-home and who performs for Williams' European sponsors those functions which others perform vis-a-vis the Saudis and TAG, is closely related to the Marquess of Bath. While Peter Collins, the Aussie Williams team-manager, comes from a somewhat different background. As Thynne recently said to Collins: *"Your great-grandfather was no doubt deported to Australia for poaching my great-grandfather's game."* It is nice to have the true gentlemen back amongst us.

## A NEW RECORD ?

The record for the most questionable record in Formula One looks to fall to Italian Mauro Baldi. Last year he managed to sign for two teams — Toleman and Arrows — before the season began, though in the end he raced for Jackie Oliver. This year, it seems the irrepressible Italian may have signed for no less than three: Ligier Alfa and... yes, Arrows. Arrows claims it has him, but next year it could be four.

# FLAT BOTTOMS AT PAUL RICARD



There's no easing off at Ferrari. Even after dark, the turbos glow red-hot.

With Patrick Tambay and Rene Arnoux, the Scuderia again has a decidedly French flavour, even if Arnoux now calls himself a San Marinese!

Renault's version of a flat bottom car, this RE30B was shared by Alain Prost, Eddie Cheever and Philippe Streiff.

Jean-Pierre Jarier has done his deal with Ligier. But as to what car, using a Renault engine when, and with what sponsor to compensate for the loss of the Talbot money, is anyone's guess...

This is how a Brabham BT50 looks with a hastily adapted flat bottom. Nelson Piquet (photo) and Riccardo Patrese shared the testing.

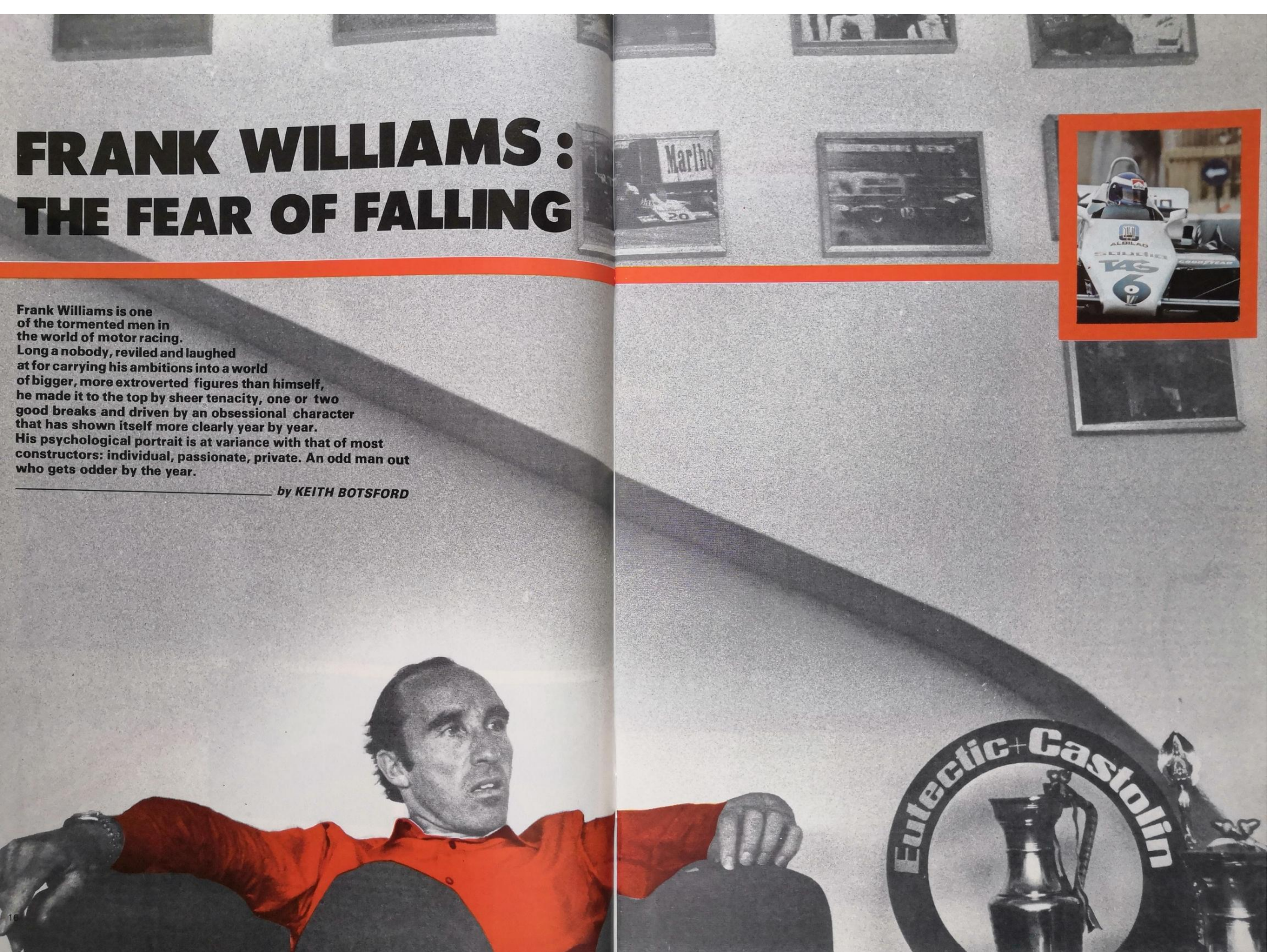
Eddie Cheever and Alain Prost before testing starts.

Philippe Streiff, fresh from F2, had his first-ever Formula One experience thanks to Renault. But it was more a question of measuring the car, which was packed with instruments, than the driver.

# FRANK WILLIAMS: THE FEAR OF FALLING

**Frank Williams is one of the tormented men in the world of motor racing. Long a nobody, reviled and laughed at for carrying his ambitions into a world of bigger, more extroverted figures than himself, he made it to the top by sheer tenacity, one or two good breaks and driven by an obsessional character that has shown itself more clearly year by year. His psychological portrait is at variance with that of most constructors: individual, passionate, private. An odd man out who gets odder by the year.**

*by KEITH BOTSFORD*



This has been another good year for Frank Williams; and a less good one. A good one in that Keke Rosberg won him the world championship; a bad one in that the abstemious, intense and difficult Williams grew more and more private, less and less accessible, day by day. The enthusiast gave way to the man who had 'arrived' and shut himself off from the family and its social aspects.

*"I am aware of it, believe me... Ever since the team turned the corner, thanks to Patrick Head and Arabian money, I have become more and more intense about running the team. I know that I'm more taciturn and difficult to deal with than I was. But I plead my own nature. I'm a serious man. I don't have the money to be a playboy. I don't carry a backgammon set with me. I'm not against people gambling and having a good time; it's just not in my nature. I can't afford to jet set about the world; all the money we get goes into winning. A Grand Prix weekend for me is 72 hours of pumping adrenalin; if I thought I could be more relaxed and laid back about it and still win, maybe I would be. But I'm a worrier."*

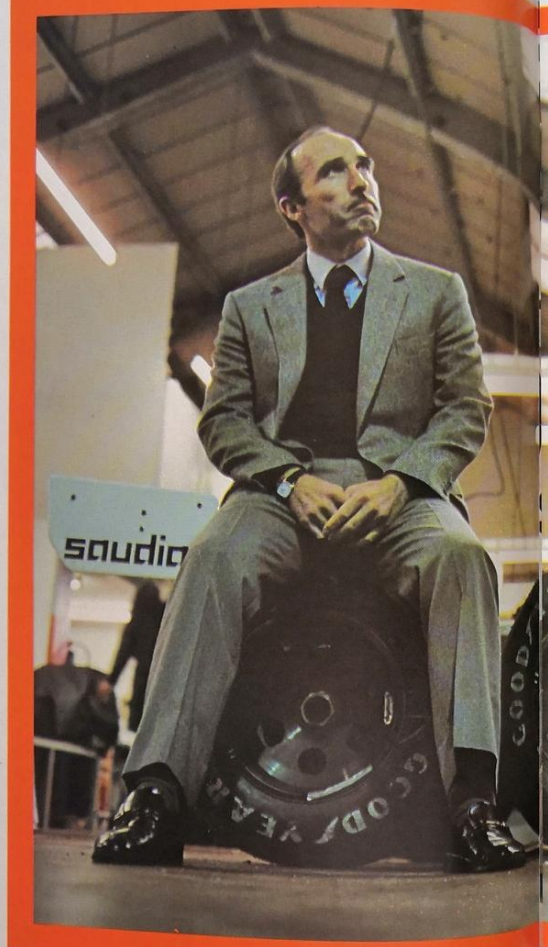
The Williams seriousness began early in life. Both as to cars and life in general. Frank's childhood is not one of those pleasure gardens to which most of the British return with such fond pleasure: in which, indeed, they dwell much of their lives. Frank's childhood was the opposite: earnest from the start.

*"My father left before I was born and I left my mother as soon as I left school. I think I've only seen her a half-dozen times in the last twenty-five years. I don't think I feel any need of those relationships. As I don't really have any close friends. I know a lot of people and I think I get along well with people, but I don't let the absence of human relations worry me. I'm very selfish person. I only think of myself and what I'm doing. That is selfish. It's true that I have a family and two children I love and that gives me a lot of pleasure. But even at home, the house runs around me. But work and pleasure are two different things. I love the countryside, but that too is a trait that belongs to the solitary. I enjoy my privacy."*

One gets the picture, then, of a man devoted to his work, to his family, to himself. The boy who fell in love with motor racing when he was eight, collected all the magazines, followed racing with intensity, was sent off to school in Scotland — having boarded out since he was four — who is Catholic, religious, quiet, righteous and very restrained. And, as we all know, Frank, after years in the wilderness, made it thanks to his Arab contacts. Men of the desert. Is there a psychological connexion?

*"Yes, I think they are like me in some ways. They are people of strong religious principles; they are also extremely self-disciplined. And, like me, they have a love affair with the car: all of Saudi Arabia is in love with the car..."*

***For eight seasons, 1969 to 1976, Frank Williams was one of the little guys, scratching to make it to the grid. With the arrival of Arab sponsorship, everything changed, but there are always constraints of some kind. Once at the top, you have to stay there, and the fear of falling is that much greater...***



Much of Frank's life is passed in Saudi Arabia: or on the telephone to his sponsors, present and possible. That in itself is a curious story, for the Saudis are not, *prima facie*, the most likely sponsors. To sell, they have little but oil. But that, Frank will tell you, is an over-simplification.

*"In general terms, what I sell down there is a very successful international racing team and a sport that promotes an image by association with that success. It helps to normalise peoples' perception of the Arab world. When I went to Long Beach with Alan Jones and the FW06, my Saudi princes turned out to be photographed: success touches on success. But the Los Angeles papers were rude about it: a bunch of young rich Arabs fooling around with cars. Well, we don't get that kind of reaction any more. We win and people respect us. As a result that Arab image is helped. They are the kind of people who like to see something of theirs floating about the world winning."*

Frank as business-man is perhaps an alteration of character? Or just a virtue born of necessity?

*"I don't think of myself as a man of business, nor do I think I have any special aptitude for it. But I know I can present my case well and I can sell myself and Team Williams. The people I deal with are extremely clever and most of us are not very bright if we look down on them as unlettered peasants whom oil has made rich. Akram Ojjeh is the sort of business man who could sort Bernie Ecclestone out, and business is the art of getting something for nothing. I'm not clever in that sense. But I have something most people in the business don't have. Where they would walk out in disgust and impatience, I stay with it. I'm persistent. I don't change my character as a human being; I just learn from year to year. In the Arab world, the secret is never to go away. If you never bother them, or you just telephone them, the Arabs think that you're not serious: if it doesn't press to be done today, then tomorrow will do. I bother the hell out of them, I won't go away."*

If you ask where Frank acquired those gifts of discipline and tenacity, his single-mindedness, his obsessionality, the answer again lies in childhood. Born in Jarrow (home of the famous march in the 30's against the Der ression) and educated in Scotland, home of the dour and the passionately rigorous, Frank was one of the early converts to the mystique of the racing car. At an early age, he had a Scots accent, a gift of languages (which came easily) and a dislike for just those things which you would think would make for a successful constructor, such as Mathematics and Physics. Patriotism suggested an army career; Frank thought of Sandhurst (the British military academy) but passion led him to a garage, in which he was supposed to work his way up in the motor business. He didn't like that one bit: dirty work and uninviting.

*"It was on the commercial vehicle side and I wasn't much good at it. For three quid a week it wasn't much of a job and I left after two years and bought a racing car on hire purchase. At that time I drove a van delivering crumpets down in Wales — the baked kind, not the female kind. It was £15 to £18 a week and all night driving, but I made just enough to race the next year. Yes, I was in love with racing. Most of us are. The car is as special to modern man as the horse was to earlier generations. It is a noble thing, you have control of it, you make it do what you want.*

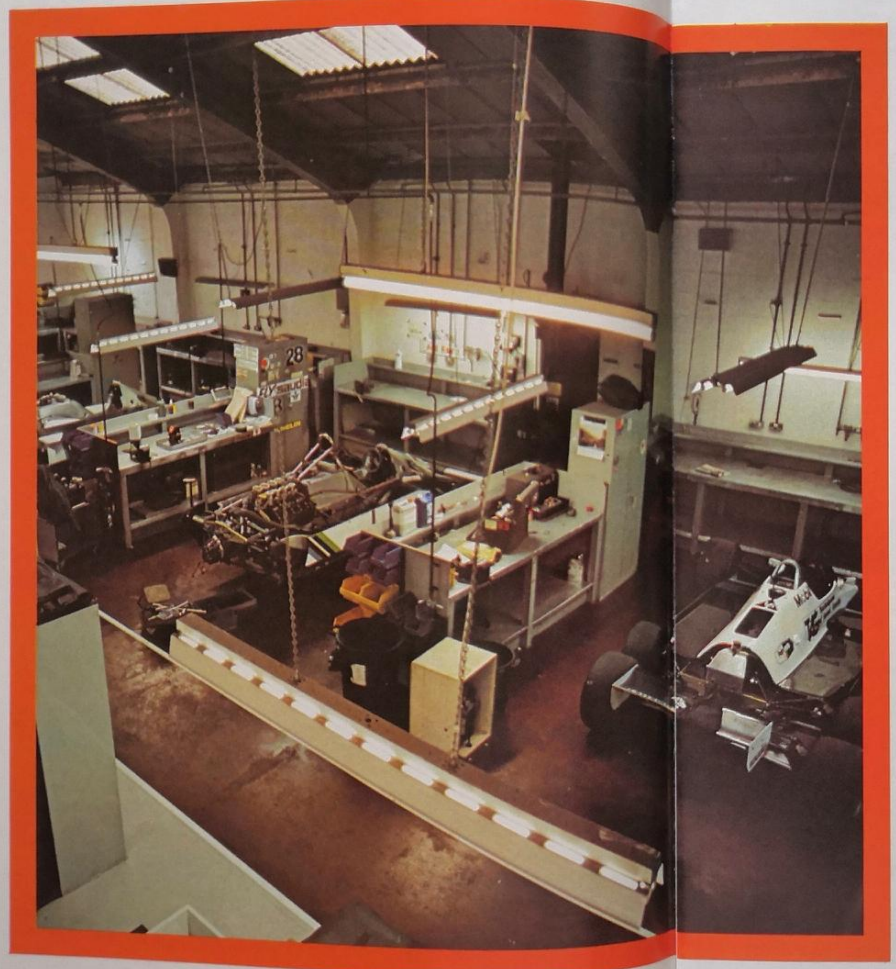
*"Racing is another solitary business, hence I am adapted to it. Particularly the beginnings. Those are very lonely years. When you're trying to make it on your own and people are not falling over each other to help you. You're always looking for money, scrounging for it, and the only person fighting for you is yourself. Drivers are like may-flies. The eggs drop to the bottom, thousands of them. One day a year they rise to the top, hatch and mate. Twenty-four hours in any year to accomplish a life's work. And thousands and thousands of eggs that never make it to the top. Like all those guys down at Brands who want to be drivers and never make it, but who hope every day that they're going to be top egg.*

*"Running a Formula One team is not quite that solitary. At least it isn't in this team. We are a group. There's Patrick Head who shares the company with me, there's Charlie Crichton-Stuart I talk to a lot, there are people to talk to, each one with his own responsibility. Everyone counts for something around here. I don't run a dictatorship. I can get things done. I get support in return."*

That puts Frank in a different class from some. The question is, what image does a constructor impose on his team? Clearly, Frank is not Enzo Ferrari, that remote figure of myth; nor is he Bernard Ecclestone. *"Bernie pays for his private passion. FOCA is just his way of keeping in racing, which is what he truly adores. If he didn't have Brabbham, he'd be a very rich man. I have an enormous respect for Bernie, but he runs his team differently. We are different human beings; we have different back-up systems. Gordon Murray and Patrick Head are two different human beings. I think that when it comes to engineering, Patrick is in a class by himself. That doesn't make him better than Gordon, only different. A racing car isn't all engineering. People who have dealt with both men have a greater affinity with Patrick; he talks their language... But you don't compare two designers any more than you compare two drivers.*

*"But we are different in technique. We run a bigger team than Brabbham. Everything goes into the team. We have 88 people here and that's twice Bernie's staff. It all goes into racing. We pay out about £100,000 a month; we hate it, but we pay our mechanics 30 % more than Bernie does. We can't afford unhappy mechanics.*

***Winning requires a faultless organization, solidly established. Frank William's workshops at Didcot are a model of organization. It's a Formula One clinic, with, in one corner, a genuine low-mileage model: the famous six-wheeler.***



*"Ultimately it comes down to a difference in temperaments. Bernie is hugely impatient, he wants results yesterday, he can't be bothered with little details, unless they are aesthetic, where anything wrong drives him mad. I am patient, tenacious and I am a delegator. And I am surrounded by first class people. I sit here and my day's not always that busy. But Bernie can't stop. I work a lot less than he does. He leaves the running of the team to Gordon and Herbie Blash; a great deal of his time is spent on other matters. That's a weakness. I know I can't do everything myself, so I have a staff that can cope. What is required is patience. You have to discipline yourself. If you let the system beat you, you'll never make out. So I've learned to swallow my pride. It's good for humility, good for patience..."*

Humility is not a word most of us associate with Frank. Not these days. Humility to the world outside and towards his sponsors perhaps; but arrogance within? *"Occasionally my staff gets restive at the endless delays with the Arab world. But I take a different view. These people are special in their own way; they have a history behind them. They've developed their country in a terrific mushroom of energy and enormous wealth which I find fascinating. I am in the cockpit of a Saudia Tristar and flying over the desert at night: suddenly I see the burst of electricity on the horizon, a hundred miles away, and that is Ryadh and my heart flies up: that is my jewel, I say to myself, this time I will score. That is my excitement."*

And if all Saudia Arabia returned to dust and sand? Frank would find other worlds to conquer. Because there is a problem. Which is called 'being on top'. One wonders if Frank remembers his days among the humiliated and the despised? Those early years in F1 when he was everybody's dogsbody and nothing in himself? When people laughed at his efforts?

*"I don't remember any of it, really. I don't remember early hunger, freezing in vans, being hungry. I know they occurred, but they don't live on within me. I do remember the hard times and harsh words in F1: all that is quite recent. But I don't hold it against anybody. Perhaps they were right about me back then.*

*"But neither the distress nor the poverty have stayed in my mind. If things go badly, I realize all too well I could be right back in those conditions. That is not my stimulus, it is not what drives me forward.*

*"One has become used to being on top most of the time, so I may be conceited. God knows, winning is immensely pleasurable in itself and for all it brings in its wake. But I also know it's hugely temporary. In Grand Prix racing, it's all evaporated, all that pleasure, by Sunday night. On Monday morning, you might as well forget about it. It's all gone. It didn't matter that you won yesterday. To be sure, you have some points you didn't have. But you could so easily lose the next race.*

*"It was never so clear to me as at Watkins Glen the year Alan Jones won the championship. It was the climax, at Montreal, of a terrific year. And people said, there's no way in which the champion is going to win any more races after climbing that particular mountain. Yet I threw myself into the Watkins Glen race in a fury. They used to call me the 'scrutineer'. I was spending all my time looking at this and that in the car and saying, is that a new part? when was this replaced? We won that race first and second. For the team, it was superb. A demonstration. Whack!*

*And then we won the first two the following year, Very good thing to have done; we didn't fall asleep.*

*"That's the spur. Or it's ego.*

*"It's falling off the top that drives me on. I couldn't live with myself if we began to fail."*

□

***For the last few seasons, Formula One has been the home of the aerodynamist, searching for every possible kilo of downthrust to glue the cars even tighter to the track. Frank spared no expense to make sure he had the best chance in that field. The Didcot factory has its own wind tunnel.***

# RACING DOWN UNDER

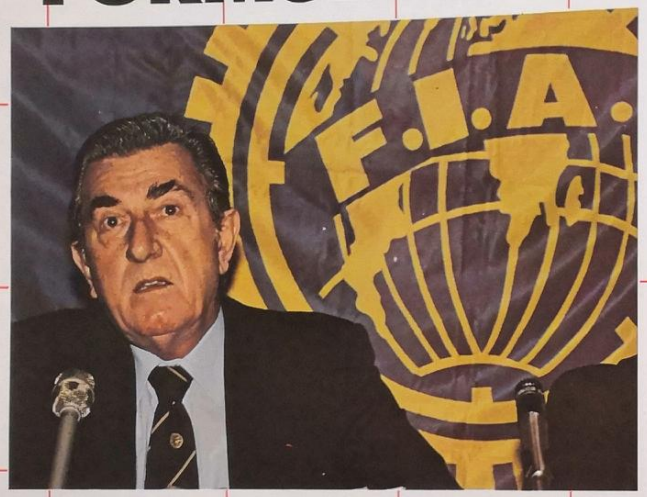
*Alain Prost followed by Jacques Laffite — the Australian Grand Prix was a double success for the French drivers in Ralt RT4s entered by the Melbourne International Raceway. (photo : N. Snowdon).*

**The Australian Grand Prix took place last November 7th with five Formula One drivers competing : Alain Prost, Jacques Laffite, Nelson Piquet, Roberto Moreno and Alan Jones. All of them took to the tiny Calder circuit in the northern suburbs of Melbourne in Ralt RT4's with 1600 cc Formula Pacific engines and Dunlop tyres.**

Alan Jones appeared as the official driver for Alan Jones racing. Alas ! his engine blew up during warm-up. Piquet, too, had his troubles: he collided with a backmarker and had to abandon the race. The other three tasted success. Moreno, Nelson's team-mate, racing for Goold Motorsport, finished third after a brilliant comeback — he had stalled at the start. Up front were Jacques Laffite and Alain Prost, racing for the Melbourne International Raceway. Alain, who was on pole, managed to finish 15 seconds ahead of the opposition.
The opinion of the drivers was unanimous: the Calder circuit was a bore. But it is about to be extended to 3,500 meters and will host a possible championship race in 1984. □

*Left to right and top to bottom: Roberto Moreno, who won last year, finished third after a superb comeback from a start-line stall; Jacques Laffite, who borrowed Alan Jones' helmet, is ahead of Alfredo Constanzo's Tiga FA81; Alain Prost wins his first race in Australia; and the start, in torrid weather before a big crowd. (Photos: N. Snowdon)*

# DISCOVERING THE NEW FORMULA ONE




*The F.I.A. has always had the power. This time it was used to the benefit of all.*

***"We are rushing headlong towards real rolling bombs whose trajectories have more to do with ballistics than with motor sports."***

**That was how most of the drivers were talking during last season. Far more than the power of the engines or the progress accomplished in tyre development, it was aerodynamics which were under attack, and more specifically, *"ground effect."***

**Now, following a decision October 13, confirmed on November 3, *"ground effect"* has had its day. Drawing a line through the past, FISA has obliged the constructors to start afresh with blank drawing boards, on which they will have to design *"flat bottom"* cars in time for the delayed starting date of the 1983 season, March 13 in Brazil.**

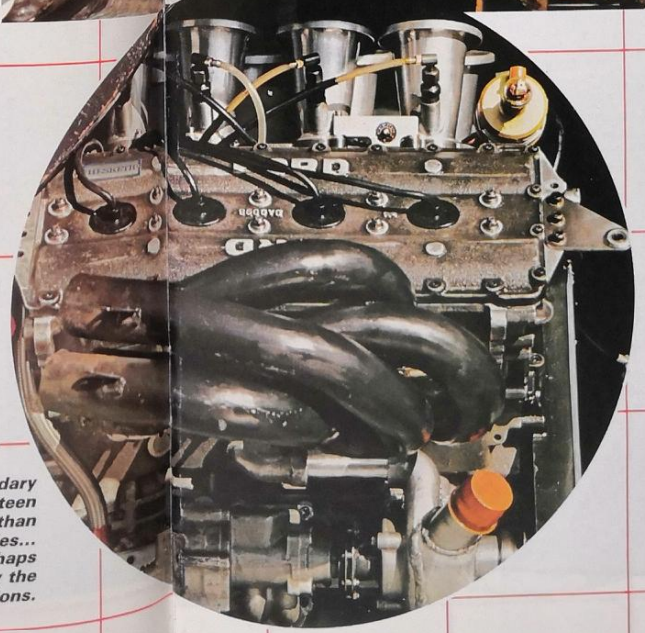
**By Didier Braillon**

The exceptional measures which we have just taken have been dictated by a case of force majeur. The injuries to Didier Pironi and the death of Gilles Villeneuve touched us all, but above all, we are afraid of a repetition of Jochen Mass' accident at the French Grand Prix, when his car flew into the crowd. There were only minor injuries, but this miracle will certainly not happen a second time."

Jean-Marie Balestre's motives were simple: do everything to ensure that the 1983 World Formula One Chamionship does not expose the drivers and spectators to the same inacceptable dangers which loomed over them in 1982.

→

*"Wing Car" and "Ground Effect" : the words remain, but they now mean something quite different.*



*The legendary Cosworth ! Fifteen years, more than 150 victories... and a life perhaps prolonged by the new regulations.*

# NOTE ON GROUND EFFECT AND WIND CARS

**The recent development of cornering performances of F1 cars results largely from the phenomenon of ground effect, which has produced aerodynamic downforce approaching four times the weight of the car and allowing transverse accelerations, which determine cornering speeds, close to 3G, or three times the force of gravity.**

The ground effect phenomenon results from a combination of the form of the curved underside of the car (the underside of the pontoons) and the lateral airtightness (by the skirts).

The functioning of the system is comparable to that which would be produced by a section of an aircraft wing turned upside down, equipped with airtight side boards and placed close to the ground. In fact, the effect of reduced air pressure creates double the propulsive force of that due to overpressure. An aircraft wing is thus sucked upwards more by its upper, convex surface than it is pushed by its concave lower surface.

Turn that wing upside down and put it near the ground, and in moving through the air it produces a vertical force towards the ground as a result of suction on the convex surface, and a pressure downwards, half as strong, by pressure on the concave surface. The principle is exactly that of an F1 rear wing.

Moving the inverted wing closer to the ground increases the speed of the air over the convex surface and reduces the air pressure, thus increasing the suction pulling the wing downwards. The vertical force towards the ground increases as the wing nears the surface. Placed close to the track, the convex surface of this inverted wing is the exact lower profile of a wing-car side-pod, with the area between the track, the skirts and the bottom of the car acting as a venturi to speed the air flow.

In the space where the bottom of the car is closest to the track, the "neck" of the side-pod, air speeds are very high and can exceed 310 m.p.h.

But when the bottom of the car gets too close to the track, the air flow between the inverted wing and the track "breaks away", or creates eddies, reducing the air flow substantially.

Because of an excessive ratio between the size of the air gap at the "neck" and that at the exit at the rear end of the side pod, the breakaway effect is out of phase, leading to the dangerous phemonemon of porpoising over bumps.

So as it moves, an F1 wing car takes a low pressure zone along with it, sucking the bottom of the car down to give the fantastic road-holding of recent seasons. With downforce as much as 2,500 kilos, more than 2-1/2 tons, the cars are literally glued to the track. But if the lateral airtightness is poor, or deliberately removed by taking off the skirts, there is a major loss of the low pressure zone because of the escape of air along the sides, the narrow width of the side pods preventing the maintenance of the low pressure zone correctly away from the edges.

On an aircraft, the wing tips also work poorly, but the wings are far longer than an F1 pontoon is wide and the major part of the wings are this protected from turbulent airflow from the edges moving over the convex surface.

The ground effect of F1 wing cars thus results from the combination of a correct profile placed near the ground with airtight sides, although the two parts of the system play an unequal role:

— supressing the side airtightness by removing the skirts reduces the aerodynamic values very considerably, whatever the side pod profile;

— supressing the profile by imposing a flat bottom theoretically means the complete elimination of ground effect.

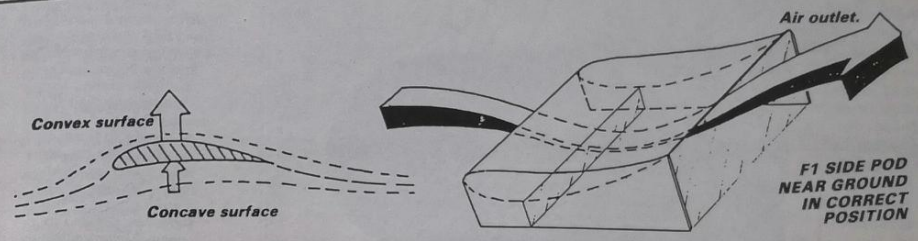
In practice, however, a sloping flat bottom between skirts can produce downforce and, by varying the angle of incidence of the car, its angle relative to the track, it is possible to built an F1 car with relatively strong downforce.

***AIRCRAFT WING***
***Convex surface: the air accelerates and causes a low pressure zone.***
***Concave surface: the air slows down and causes a high pressure zone.***

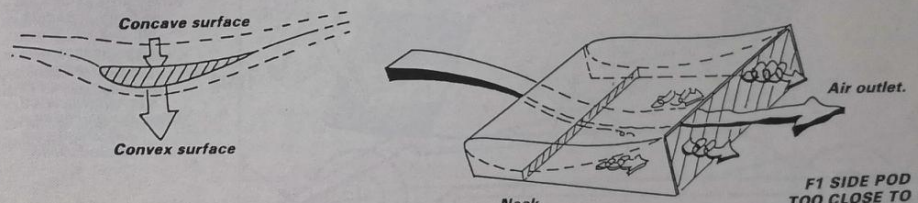
***F1 REAR WING (INVERTED AIRCRAFT WING)***
***Concave surface: the air slows— high pressure zone***
***Convex surface: the air accelerates— low pressure zone.***

***F1 SIDE POD (INVERTED WING NEAR THE GROUND)***
***Concave surface: the air slows— high presure zone.***
***Convex surface: the air accelerates and, close to the track, creates a zone of very low pressure***

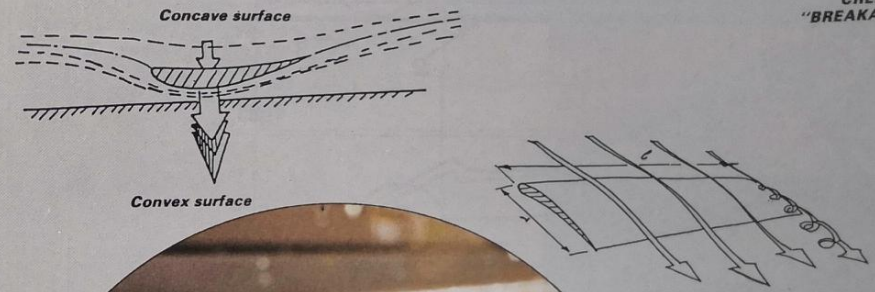
***Blamed for all possible ills, those costly and short lived skirts finally disappear.***

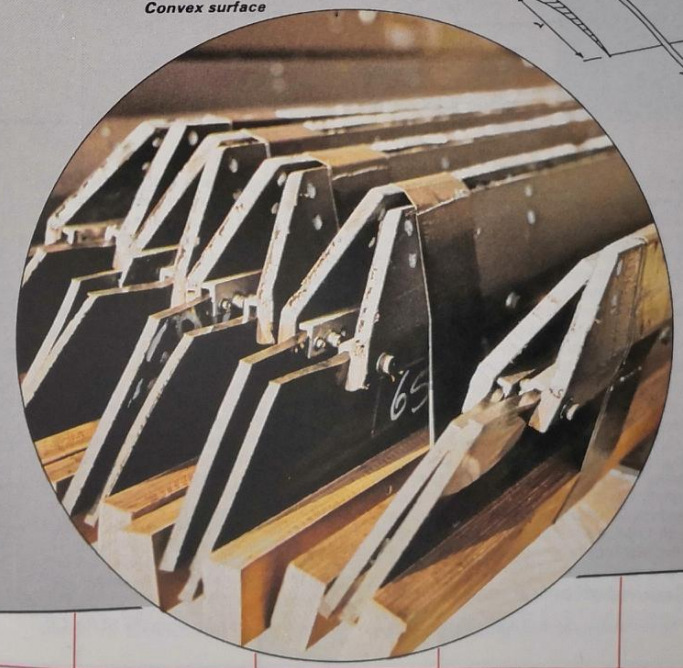



***F1 SIDE POD NEAR GROUND IN CORRECT POSITION***




***F1 SIDE POD TOO CLOSE TO THE GROUND, CREATING "BREAKAWAY"***

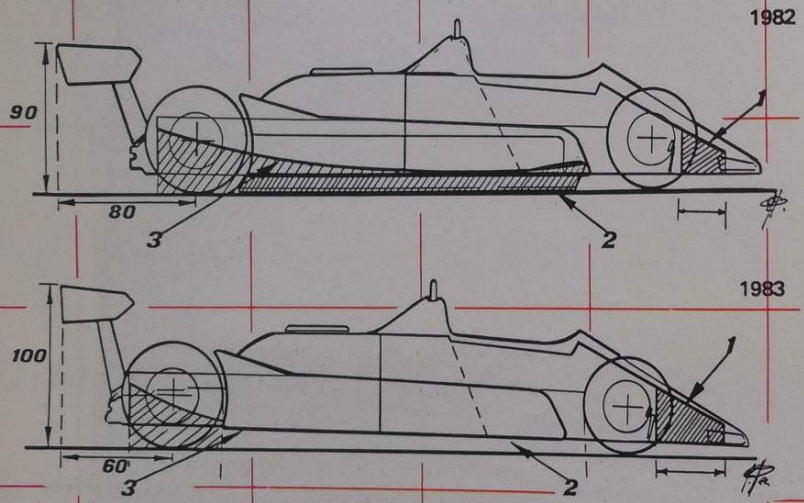


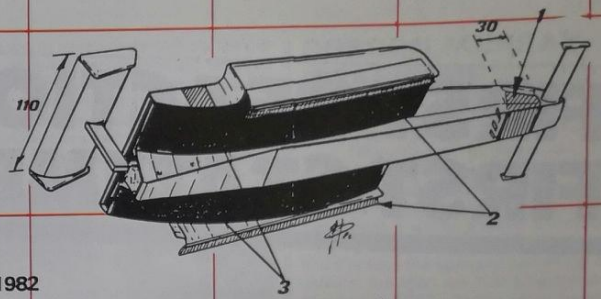



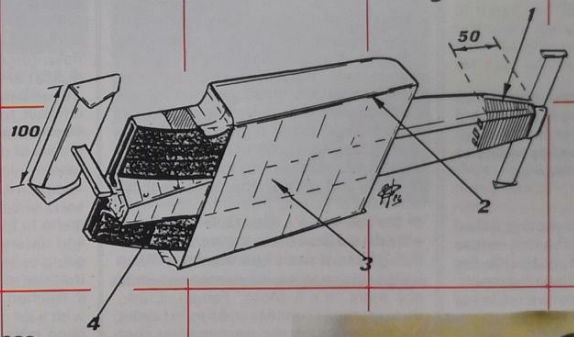
***AIRCRAFT WING***
***The tip functions badly because the convex surface is invaded by air from the edges. On Formula One cars this is avoided by using lateral skirts closing the space below the side pod edges.***

*There are different actuarial tables for the different parts of a driver's body : his legs and feet cost most. The cost should now come down, for the protection in front of those fragile members has been extended.*

*These four drawings by Giorgio Piola clearly show the differences between the 1983 flat bottom, skirtless cars and the 1982 wing cars. On the side views, the shaded section (1) shows the pedal box designed to protect the driver's legs, which will increase from 30 cms to 50 cms ahead of the wheel in 1983. The area (2) shows the 1982 skirts which define, from the start of the side pod to the back of the rear wheel, the ground effect area shown in the lighter shading (3). For 1983, the skirts disappear, a flat bottom is mandatory and the possible ground effect is reduced to a very small area behind the flat bottom, shown shaded. The rear wing overhang and height are also changed, from 80 and 90 cm in 1982 to 60 and 100 cm in 1983.*
*In the underviews, the reduction of the rear wing width from 110 cm to 100 cm is also noticeable, while the areas 1,2,3 and 4 are more clearly visible. (1) shows the pedal box, (2) the 1982 skirts and their absence in 1983, (3) the side pods which generated ground effect in 1982, and the flat bottom in 1983, the latter rule making ground effect possible only in the area of (4), behind the flat bottom and on either side of the gearbox cover.*



*Those famous refueling stops can continue in 1983 and 1984, but by 1985 they go.*

Announced October 13 at the end of a meeting of the FISA Executive Committee, the decision to *''kill ground effect''* within a short period took the constructors by surprise. Alarmist rumuours circulated immediately, the old sea serpent of a *''parallel championship''* reappeared, but finally, common sense won: with the unanimous agreement of all parties involved, — notably the FOCA members and the *''grandee''* constructors, — the Formula One Commission meeting of November 3 brought an end to ''rolling bombs.''

The principal measures designed to substantially slow down the cornering speeds of F1 cars were: a ban on side skirts and shaped underbodies, with an obligatory flat bottom which, for the moment, reduces ground effect to near zero, rear wing width reduced from 110 to 100 cm (to reduce its surface) and overhang cut from 80 to 60 cm relative to the back wheel axis (to reduce its efficiency), and the wing height increased from 90 to 100 cm above the ground to improve the driver's rear vision.

In exchange, and in order to placate the British constructors who have always thought that only the optimum use of ground effect would enable them to continue competing with the turbo brigade, the minimum weight will be cut from 580 to 540 kilos. That weight is easy to achieve — because it was achieved regularly during qualifying this season — by teams using atmospheric engines, but is seen to be more difficult for the turbocars. FISA was in fact taking a good sporting step, by balancing everyone's chances, and a good political one, by giving FOCA satisfaction. But it did not satisfy the drivers, who believe it could lead to even more fragile cars as the less well financed teams seek to save kilos with technically hazardous solutions using unsophisticated materials.

## Ground effect: five years old

The technique came of age with the Lotus 79 which took Mario Andretti to his World Championship with disconcerting ease in 1978. In four seasons since, the cars improved by an average of 10 seconds per lap. Using Paul Ricard as the example, lap times of 1'44''41 dropped to 1'34''40, a trend confirmed at all the other circuits, which, mostly unchanged, were quickly becoming completely unsuited for Formula One. Taking Paul Ricard as the example again, times under 1'30 were being predicted for 1985 if the 1982 rules continued unchanged.

After some five years' progress, and to understand the practicality of banning skirts and imposing a flat bottom, it seems useful to review the use of ground effect obtained by wing-cars. To do so, GPI has been greatly influenced by *''Evaluation of the rules-performance relationship for Formula One''*, a study carried out by French expert Robert Choulet at the SERA-CD aerodynamic laboratory for FISA.

This analysis, drawn from the SERA-CD study, is clear, and the closing lines of the *''Note on ground effect and wings cars''* prove that by deciding to *simultaneously* impose a flat bottom, even if it is allowable to angle it, and suppressing skirts, the ground effect which provides strong aerodynamic downforce will disappear.

FISA's first draft of the rules Oct. 13 underwent revision as reports came in of such things as porous, slatted or other bottom designs immediately getting around the spirit of the rules. From the November meeting, with the agreement of the teams, came this wording on flat bottoms:

*''Between the rear edge of the complete front wheels and the front edge of the complete rear wheels, all sprung parts of the car visible from directly beneath the car must lie on one plane within a tolerance of plus or minus 5 mm. All these parts must produce a uniform, solid, hard, rigid (no degree of freedom in relation to body/chassis unit), impervious surface, under all circumstances. The periphery of the surface formed by these parts may be curved upwards with a maximum radius of 5 cm.''*

Skirts are banned by the rules which says:

*''Any device or construction that is designed to bridge the gap between the sprung part of the car and the ground is prohibited under all circumstances. No part having an aerodynamic influence and no part of the coachwork may under any circumstances be located below the geometrical plane generated by the plane surface provided for by Art. 3 (3)''* the flat bottom rule.

Another change in rules puts the onus on the constructor to prove to the scrutineers that his car is legal, rather than vice-versa.

## Towards 1985

Apart from killing ground effect, the November 3 Formula One Commission took the following decisions:

— at the end of 1984, a *''Formula One Convention''* will continue the financial aspects of the Concorde Agreement for two years, but the very controversial unanimity vote for rules changes — one of Jean-Marie Balestre's major problems — will be replaced by the requirement. That at least 85 % of the 10 top teams in each of the two previous seasons must agree to the proposes changes. FISA will also have its power to make emergency safety changes restored.

— with the aim of freezing engine power at 500 to 550 hp in 1985, fuel tanks will be reduced progressively, from 250 litres now to 200 in 1984 and 195 in 1985. A working party is to report by October 1983, on other ways of stabilizing power output. Refuelling will be banned from 1984 and the length of Grands Prix maintained.

□

# FIRST REACTIONS, FIRST STATEMENTS

To make such profound changes in Formula One cars in a few weeks is sufficiently exceptional an occurence for there to be a wide variety of reactions in most of the teams.

To feel the general pulse, we first asked a number of British FOCA teams — those who at first glance seem most affected by the FISA rules — for their reactions. We then inquired in Italy before returning to France to get the first reactions from Renault after one of its RE30B's, minus skirts and flat-bottomed, with a rear wing set at 60/100/100 (overhang, width, height), went out testing at Ricard between the 23rd and 26th of November with Alain Prost at the wheel.

***Ken Tyrrell: "the regulation does not deal with the fundamental problem, which is the power of the engines."***

## KEN TYRRELL (TYRRELL)

I'm still swallowing, frankly. In terms of adjusting our existing cars, we could do it in about three weeks. It is whether they'd be any good after those three weeks that would make the difference. Making cars comply is actually quite easy. I think this change in rules achieves what the drivers wanted, which is a reduction in cornering speeds, but they haven't tackled the power thing which is the biggest problem. I would have thought that if they wanted to make motor racing safer, they would start by reducing the power of the faster cars because it is those cars that are going to cause the problem. That's the big weakness of these regulations. Otherwise, it's just a matter of throwing away side bodies and getting the suspension to work and getting the car balanced, with little or no help from the underneath of the car. But it's debatable whether it will be safe or not. It's a drivers' formula though. It will really sort them out. They won't be going round corners on rails any more. It's a Moss, Fangio, Clark, Stewart type Formula, and I'm in favour of that. I've got the next man in that mould you see : I've got Alboreto !"

## JOHN BARNARD (MC LAREN)

I'm now working on not only our new car for the TAG turbo engine, which will be called the MP4-2, but also a revised version of this year's car, the MP4-1/B which will conform to the new regulations, still with a Cosworth engine, and called the MP4-1/C. I had actually started the new car some time ago, but had to throw away all the drawings when the new regulations came out.
The chassis shape is now going to change considerably. It certainly isn't

***John Barnard: "we will be able to regain up to 40% of the ground effect we had last year."***

case of just bolting on a flat bottom and going racing. You're not even going to be in the ball park if you do that. I think we'll start the season having regained between 30 and 33 per cent of what downforce we have lost through the regulations, and we may get that up to 40 per cent, but thereafter it will be very difficult to get that back.
The new regulations will change the emphasis of development. For example, we haven't looked at our rear wings for ages, and now we find that they're all sorts of different shapes. Those are now going to be very important. The changes and differences are so small, yet they're going to be vital. But I think the first thing that we're going to notice is a difference in traction. It hasn't been very important with a lot of downforce because it hasn't been missing, but it's going to be very interesting to see how much traction is available without downforce. Even

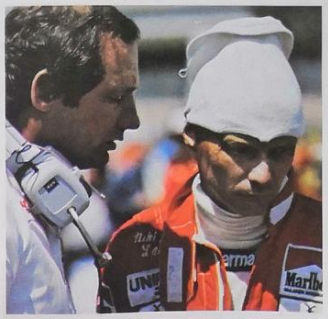
***Peter Warr: "the increase in work given to us is sheer madness."***

though we used a narrow tyre through most of 1982, we never had a traction problem, but it will crop up again now. There will be some emphasis and pressure on the tyre companies to solve this. I must admit that I'm still amazed by the size of the changes. I don't see how anyone can go so far over centre. But if they're going to be stable, why not ? I don't mind. It will just take up a lot of time."

## PETER WARR (LOTUS)

We don't think the new regulations comprise the package the best suited to obtain the objectives. The basic parameters affecting performance are tyres, weight,





***Ron Dennis: "when a body has a completely flat underside, it creates lift."***

aerodynamics and horsepower ; it is these that you have to control. It's now two and a half months before the start of the season. Everyone knows that we have to build a new car to use with the Renault engine, and yet suddenly the regulations are changed. I can't think of anything more crazy.

## RON DENNIS (MC LAREN)

We're not very impressed really. The new regs nullify a great deal of our work, just as they will to every other Grand Prix team. These regs seem to have been arrived in total ignorance of aerodynamics. I mean, totally flat bottoms could well give lift, which is simply dangerous.
We're still in a daze frankly. We're looking at the whole picture and deciding whether it would be better for us to acknowledge its advantages and ignore the disadvantages...
We're trying to be sensible about it and consider its effect on our programme. I don't now think there will be much of an aerodynamic gain from using the TAG Turbo Porsche engine.

## ALASTAIR CALDWELL (ATS)

We are working on one car with a BMW engine for Manfred Winkelhock which we were designing when the new rules came out. Consequently, we've really been thrown by the new regulations. They are probably affecting us more than anyone else, because we are not going to be able to use one single component from the current car on next year's machine. Furthermore, we haven't even got a car to test, and everyone else is still testing.
We'd like to stop and have a re-think because of the change of regulations, but we can't go back, so now we probably won't have the perfect car for the job. I think the regulations are OK, but I just think they were applied too soon. I think they were quite a good idea, because someone had to do something : the constructors themselves were never going to decide. But I hope someone is

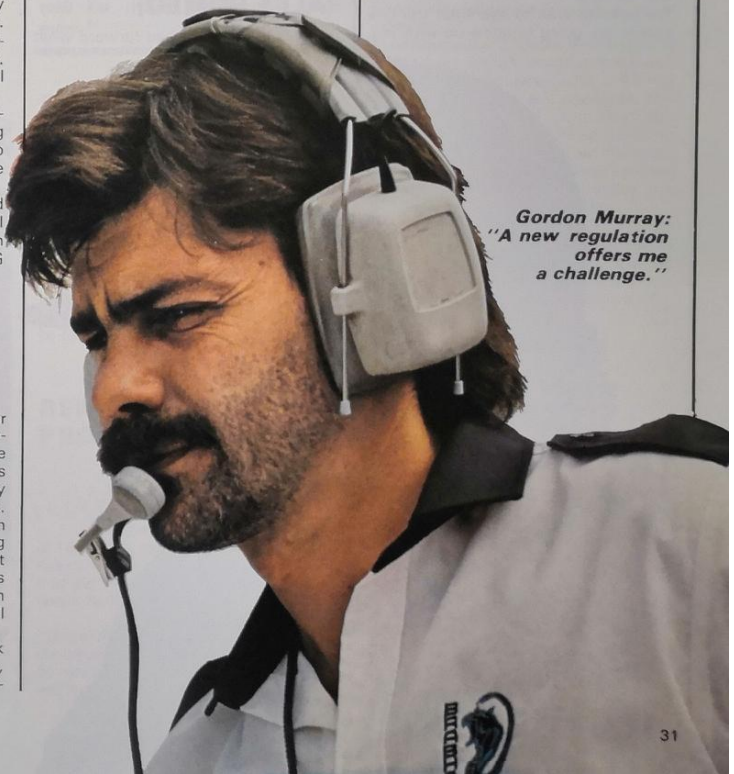
***Alistair Caldwell: "I hope that in the future someone will be able to control the imagination of FISA."***

going to control FISA's imagination in the future, because now that they've got away with changing the rules once, I hope they're not going to think that they can do it again. Once they've tasted that they can do it, if they try again, we could all be in a dreadful state..."

## GORDON MURRAY (BRABHAM)

These regulations will slow the cars down in the corners, but they'll be quicker on the straights. For me as a designer, it's always a challenge starting again ; I suppose we're quite looking forward to it. Yes, I think it will be a better spectacle, but it will also be a bit more dangerous. It will reduce the speed of cornering accidents, but then we didn't have many of those in 1982. On the other hand it will make the type of accident that we have had this year even worse, because the cars will be going faster.

As for Brabham, il will be a lot of work for us. We ran a new rear end earlier in the week that the new regs were announced, and now that is just scrap. But then we've drawn everything so many times already this year to conform to rumours of new regulations that we really don't mind doing them again, as long as this is the last time. At least we can get on with it now. These regulations changes have been rumoured all year, but at least these measures should keep everyone quiet.
The one thing that it has done is put an emphasis on engine power. The Cosworth users won't be at quite such a disadvantage now that the weight limit has been reduced, but I still think that the emphasis is on engine power.



***Gordon Murray: "A new regulation offers me a challenge."***

# FIRST REACTIONS, FIRST STATEMENTS

## PETER WRIGHT (LOTUS)

The new rules are technically quite good, but at a time that road cars are beginning to have contoured floor pans, I'm sorry that Formula One isn't making a contribution to the automobile industry as it has in the past. But in terms of slowing the cars down, these regs will do the job. It's like bolting on an instant six seconds a lap. Now we're all going to be scrabbling around for that three/four seconds again.

It's quite hard to find out where you can get that time back again within the rules. It certainly kills off ground effect. There's an enormous area under a car, and everyone will be working on it. There's change of emphasis, which has been accelerating all year. It's away from aerodynamics and into weight-saving, downforce and drag in a more mechanical way.

We now have a mock-up of a Renault engine in a mock-up chassis, but we're in a difficult position. No one wants to produce a new car, but we have to. Everyone else would rather modify their existing cars and then sense which direction to take.

We have to wait to see what the tyre people are going to come up with too.

***Bruno Giacomelli: "we have made a very important step in the field of safety."***

So at the moment, there's not a lot that's settled, not for another month will there be I don't suppose. Radical ideas don't appear overnight, they take years, maybe three years, during which time one assesses how they should be applied."

## BRUNO GIACOMELLI

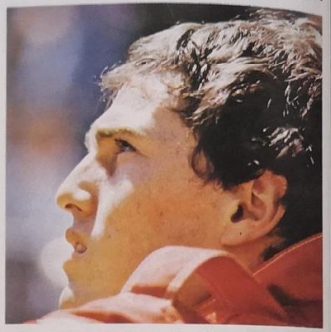
The situation won't change much. The best will always be best, but it is a considerable step forward for safety and that is a plus.

## ING CHITI (ALFA ROMEO)

FISA has simply pushed forward what the majority of constructors wanted to see in 1984 : that is, to see the speed reduced. Frankly, there was no other way. Still, I don't exclude the possibility that at the end of the day, cars will have come close to this season's speeds.

## ANDREA DE CESARIS

The car is going to be much harder to drive ; there will be much less adhesion on the curves and that will make life a lot more difficult. The critical moment will come between braking for a coner and accelerating out of it. In my opinion, there will be far more accidents.



***Andrea de Cesaris: "the cars will be a great deal harder to drive."***

## RICCARDO PATRESE

I consider it a great step forward in safety. There will still be accidents, of course ; accidents are part of racing. But the races themselves will be far more spectacular.

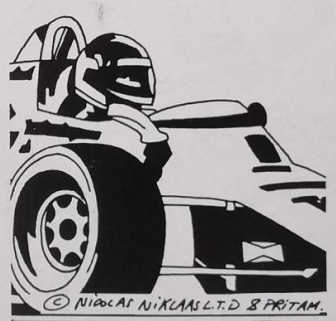
***Riccardo Patrese: "there will still be accidents but they will have less serious consequences."***

***Carlo Chiti: "It was the only logical evolution."***

***René Arnoux: "many of us will have to modify the way we drive."***

## RENÉ ARNOUX

Certainly the car is much harder to drive : entry into a curve is much slowed and the exit is far less precise. On the straights, however, the cars are much faster, and I think many of us are going to have to change our driving styles.



***Patrick Tambay: "the races will become spectacular again."***

## PATRICK TAMBAY

This year's Ferrari would certainly have had an advantage and won the world championship. But the cars are going to be much more liable to spin : it isn't going to be like last year, when I felt I was driving on rails. Confidence to use the new cars is going to come slowly. Tyres will be all-important, but for us, that's a Goodyear problem, not a Ferrari problem. The advantage will go to the experienced drivers and races will be far more spectacular. Including some spectacular spins !

***Elio de Angelis: "From now on, F1 will be more dangerous than ever."***

## ELIO DE ANGELIS

Formula One is now a lot more dangerous than ever. Speeds on the straights are going to be enormous, while there will be a lot less adherence — especially when you consider that turbos will be racing with something like 700bhp of sheer power. The more precise drivers will know to take advantage of the new rules. But then, ever since I started driving, I've been driving with skirts ; I confess I'm quite curious what it's going to be like without them.

## RENAULT TESTING PROGRAMME

While theoretical work in the wind-tunnel goes on to learn something about the behaviour of 1983 cars, actual testing on the circuit has consisted in breaking-in the cars to find out the relative importance of different factors.

*"One of the results of the new rules is that the mechanical behaviour of the cars will be very different; suspensions and tyres will have to be completely rethought. Renault, whose entire experience in F1 has been with wing cars, must now do double-time to keep up with those teams who have more experience with conventional singleseaters,"* said a team member.

Alain Prost put in 170 laps on the shorter 2,200-meter circuit. His best time was a 47"36. This compares with a 43"92 with the 1982 skirts and side-pods. The difference is great. On the full 3,300-meter circuit, Alain could do no better than 1'10"45. Before the rule-changes, the one-minute barrier seemed destined to crumble soon under the onslaught of ground-effect cars.

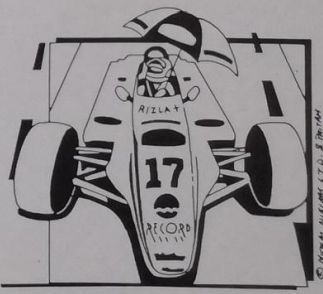
On this first outing, Prost found his car delicate to drive, but Renault engineer Michel Tetu remains optimistic : *"In three days,"* he says, *"Renault has a much clearer idea of the solutions required for the first serious tests."* □

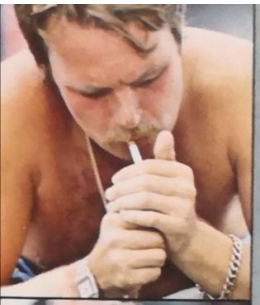
## The new 1983 calendar

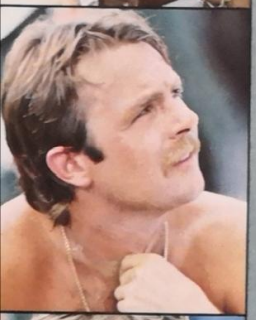
To allow the constructors to adapt their cars to the new flat bottom principle, or to build completely new ones, the F1 Commission decided to set back the start of the 1983 season by one month. Consequently, the South African GP, which was to open the season, will now be the closing race.

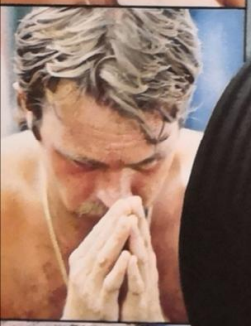
| | |
|---|---|
| March 13 | : Brazil (Rio-Jacarepagua) |
| March 27 | : Long Beach (revised circuit) |
| April 17 | : France (Paul Ricard) |
| May 1 | : San Marino (Imola) |
| May 15 | : Monaco |
| May 22 | : Belgium (Spa-Francorchamps, if pits rebuilt, or Zolder) |
| June 5 | : Detroit |
| June 12 | : Canada (Gilles Villeneuve Circuit) |
| July 10 | : Switzerland (Dijon) |
| July 16 | : Britain (Silverstone) |
| Aug. 7 | : Germany (Hockenheim) |
| Aug. 14 | : Austria (Zeltweg) |
| Aug. 28 | : Holland (Zandvoort) |
| Sept. 11 | : Italy (Monza) |
| Sept. 25 | : New York (new circuit to be named) |
| Oct. 9 | : Caesars Palace (Las Vegas) |
| Oct. 29 | : South Africa (Kyalami) |

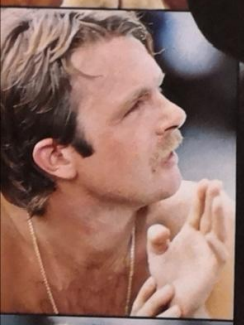
This calendar lists 17 races, one more than the maximum limit, so one of the races will be dropped to a "first reserve" status, to be run only if another race drops out.

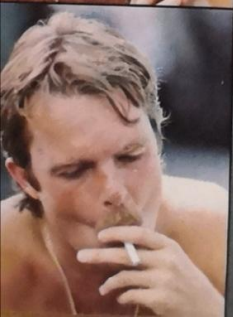












***Good cars make good drivers, and good drivers sooner or later find good cars... In 1981, Keke Rosberg was scratching around for qualification in a Fittipaldi ; 1982 was a saga of victory. A season practically errorless and a Williams FW08 that was hard to set up and drive but splendidly reliable transformed a spare wheel into a genuine world champion. A title well seized by the sober but witty Finn, and whoever wants to take it from him will have to work hard !***

***(Photos : B. Asset)***

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# CALENDAR OF THE 1983 FORMULA 1 WORLD CHAMPIONSHIP

RENAULT elf

*René Arnoux on the left, Alain Prost on the right: in the middle, the RE30B with its V6 turbo engine. Renault looked ready to murder the opposition in 1982. As ever eager to throw lifebelts to the already saved, a large majority of the press had them tipped as hot favourites. A touch of ill fortune, some unforeseen and all-too-often-repeated problems with reliability, a handful of internal rivalries and some open cock-fights gave the opposite result. The stronger one feels, the harder it is to lose. To Renault, all credit for not quitting in a state of collapse. Next year maybe...*
*(Photo B. Asset).*

*We all thought Niki definitively lost to Formula One, he'd taken wings and was flying in his own sky, far from the sound and fury... Certain forked tongues had their comments to make, but his return to the hot seat was fruitful. Twice, at Long Beach and Brands Hatch, his splendid McLaren MP4/1B crossed the finish line first. As though by coincidence, these are also circuits that make heavy demands on the drivers. Demands for the pure, the hard, the refined and the big-hearted.*
*(Photo: B. Asset)*

*"Hell and damnation ! That's what happens if one gets distracted !" Comic-strip bubble for our driver.*

*But Michele Alboreto is no comic-strip hero drawn in India ink, but a real driver, a fine one, and one for whom Ken Tyrrell sees a future championship — despite his little faux pas at Detroit. To set the record straight, let it be clear that the mistake wasn't due to what our facetious artistic director makes it seem...*

*(Photo B. Asset)*

# ASSET ON ASSET

**Four things distinguish Asset as a photographer: the quality of the eye, a catholicity of interests, an attention to detail and a passion for vibrant colour. The man himself is young, small, compact, solitary and modest. His father an engineer, the young Asset does a professional course in his art, six months then in America and a three-year apprenticeship before GPI takes him on as its principal photographer.**

*I wasn't supposed to take this picture of Alain Prost. Not this way. Normally you'd mount the camera and set it to work by remote control. Luckily, it was first gear most of the time. A mere 80 kph. But I did catch the impression of speed.*
***Canon FI, 17 MM, 1/30 sec.***

Giacomelli in his balaclave : two holes for the eyes, one for the mouth. The driver stands out against the dark background. The ritual doesn't last long, so you have to be there to get it.
Canon AI, 200 mm, 1/250 sec.

The pile-up at the start of Monaco, 1980. I was in a special place, up on a walkway at Sainte Dévote. I was up high and didn't have to refocus. The picture itself is nothing special, but it's the one most people seem to want. The higher the car, the greater the demand.
Canon AI, 200 mm, 1/500 sec.

Jacques Laffite in a Talbot-Ligier in Spain in 1981. It's a pure action shot. It was shot at a very low speed. The point is to get the one thing you want very clearly ; the rest is motion. Hand-hold the camera and follow the car ; you click when you think you've got it right.
Canon AI, 300 mm, 1/30 sec.

Riccardo Patrese when he was driving for Arrows in its Warsteiner livery in 1979. Orange gloves on the wheel and the instrument panel : blue and orange. The colour is so warm. The telephoto lens isolates details.
Canon AI, 200 mm, 1/250 sec.

Photography is a peculiar art: it consists of capturing what everyone can see but doesn't. The artist himself is hidden, his eye behind the camera, his personality, we think, effaced behind the objectivity of the recorded event. For our Asset, however, it is not an abstract art, but *"invention and work, intuition and being informed, knowing what might happen."* Beauty plays its part, which is subjective, which resides in what is photographed but is only to be seen by the artist. *"I am a reporter and what I produce is first and foremost a document which bears witness to an event. I work with the instantaneous, the improvised. Sometimes, I compose, but during a race that is well nigh impossible. That is why I like testing: there I can do what I want and take my time."*

Subjects are sometimes imposed: by the commission itself, by the nature of the event, by what is available, by where the photographer happens to be. But there is a substratum that is the artist's own domain. It is what he looks for. *"My subjects grow out of an interest in the light, the backdrop, the colour. But improvisation always plays its part.*

*"Sometimes I am surprised by what I have taken; but not always. That is because though you may set up your camera beforehand, ready your exposure, prepare yourself for what is going to happen, a fraction of a second can make all the difference. For instance, despite the risks of not doing so, I use my motor very little — only at the start of the race, where so much happens you may not actually see it — but most of the time I feel you have to choose your subject, it's a conscious act."*

*"My advice to the amateur is simple. Don't try to start at the top. Don't start with pictures of Formula One. It is too difficult. Just to get access is difficult. But if you do rallies, you can go anywhere: and there, there are few good pictures, so there's a market.*

*"Today, I have limitations. There are pictures I am obliged to bring back; it is expected of me. It dilutes the quality of what I do. To the amateur I would say, try to take different pictures, do what others don't do. The amateur has no obligations, so he is as I was when I started out.*

*"The third thing that is important is to*

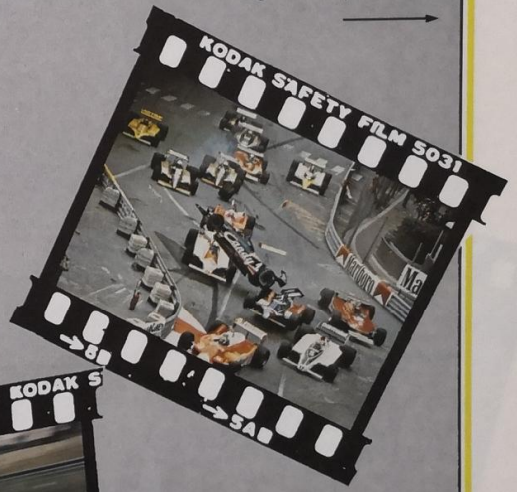


photo E. Zurini

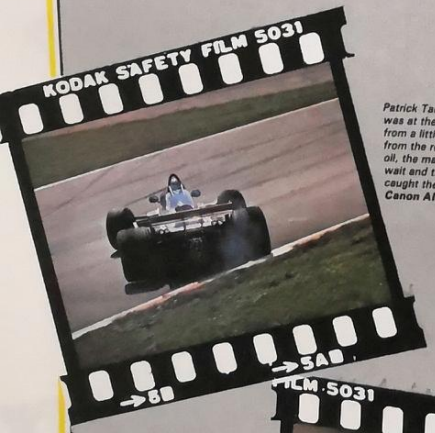
bring back pictures. It seems ridiculous, but in fact the door is always open for that special picture. It is an expensive profession: in films, in equipment, in travel. But there is always a way. Now I take thirty to forty rolls of film over a race weekend, but when I started out, three rolls over a holiday was a lot.

"All photographers make mistakes, but I find I make fewer and fewer. But I try to perfect myself. Particularly in capturing motion, which is the most difficult part of the art. An action shot must contain a lot of movement and to obtain that movement, you work at low speeds. If you shoot at 1/1,000th of a second you can read the letters on the tyres, in which case you might as well shoot the car standing still in the pits. But the risk is always there when you shoot at low speeds, at 1/30th or 1/60th, it is a matter of chance, but the effect of motion, against a blurred background, is particularly beautiful."

Photography is a neutral art, not a political act. The artist is hidden. "Sometimes a driver may appear ridiculous or absurd, but never in their faces or expressions. If I don't like a driver, it simply comes out less of a picture. And there are some you may not see. You don't see the truth about them... Many photographers are bound, by their market or by their taste, to a narrow view of the sport: they photograph their own countrymen. I am fortunate in that I like to look at all sorts of drivers in all sorts of ways.

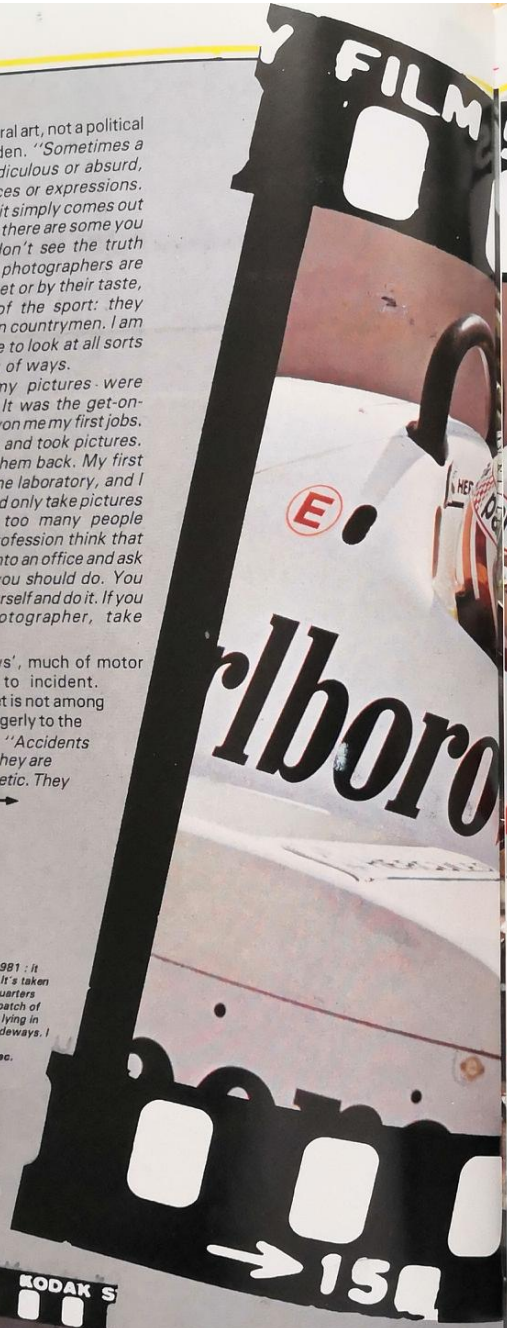
"When I began, my pictures were relatively mediocre. It was the get-on-with-it attitude that won me my first jobs. I simply went places and took pictures. And then I brought them back. My first salaried job was in the laboratory, and I didn't like that; I could only take pictures on weekends. But too many people starting out in the profession think that what you do is walk into an office and ask the man what it is you should do. You should know that yourself and do it. If you want to be a photographer, take pictures."

As reporting is 'news', much of motor racing is devoted to incident. And accident. Asset is not among those who stride eagerly to the scene of the wreck. "Accidents are spectacular, but they are not necessarily aesthetic. They embarass →

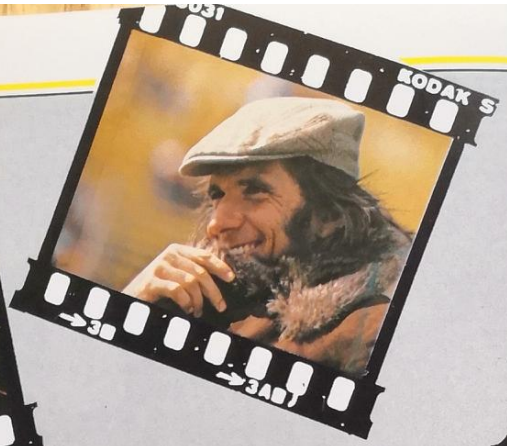



*Patrick Tambay in a Ligier in 1981 : it was at the chicane in Austria. It's taken from a little above and three-quarters from the rear. I had noticed a patch of oil, the marshalls didn't. I was lying in wait and the car really went sideways. I caught the surprise.*
**Canon AI, 200 mm, f/125 sec.**

*Alboreto in his helmet. Again, the background is dark and I was able to so focus that you can't see the sponsors' names on his helmet. Those blobs would have weakened the effect, but here you see into the helmet to the balaclava and the two eyes peering out. I am especially fond of its sobriety.*
**Canon AI, f 85 mm, f/125 sec.**




*Niki Lauda at this year's Long Beach Grand Prix. The focus is on the helmet and the movement of the arms, with just a wheel in the foreground. You try to get the driver in motion. I like the neutral grey behind.*
**Canon FI, 300 mm, f/250 sec.**




*me. And then I hate to be among other photographers. I am a loner. I have my own places from which I watch. A race may mean three or four different spots, which is why I like practice better; then I can move around more. But essentially it is a solitary task and I don't like company. In reporting, the slightest inattention can cost you a picture or make it less good. It is necessary to watch and to see; you have to keep your eye open at all times. I am just as solitary in my personal life, and it doesn't bother me to be alone: to eat alone, travel alone, go to the movies alone.''*

Formula One is a sport for aesthetes as much as for heroes. It is the XXth Century sport: man and machinery combined in that special circumstance which we call a race and which is, for many, a fantasy of what they might be doing in their own machines. For a photographer, therefore, it has a special appeal. *''First of all, there is the colour. You couldn't ask for it to be more beautiful. It is beautiful and clean, very pure, very burnished and polished colour. The machines are beautiful in themselves: for their shapes, for their oddities, for the differences between them. Details are beautiful: engines, manifolds, wings, tyres.*

*''Then there is the spectacular aspect which belongs to the drivers. Of course the spectacle of the race itself and its mishaps and triumphs. But also the more intimate aspects of racing which many photographers cannot be bothered to capture. I find the ritual dressing of the drivers particularly beautiful: the brief time before a driver gets into the car, when he pulls on his balaclava, his helmet, his gloves. They are like knights in the middle ages. The race itself is for me a lesser thing: apart from the start, the rest is made for the cinema.''* □

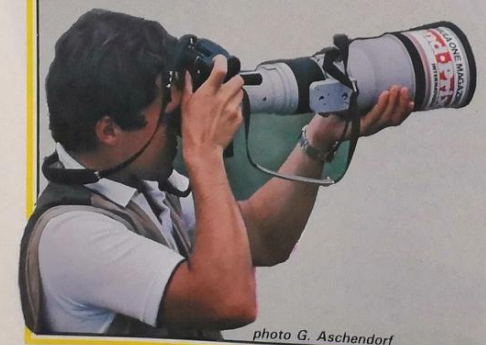


photo G. Aschendorf

*A mechanic is burnishing... like a dentist. I like mechanics and their work ; I liked the sparks. It's a picture you could find in any garage. Light and colour make it, and the man working.*
**Canon AI, 85 mm, 1/30 sec.**

*Emerson Fittipaldi in Canada in 1980. Some might see the wild beast in him, the fur ; I saw the classic side, a world champion seen as a champion. Also as a figure of fashion.*
**Canon AI, 300 mm, 1/500 sec.**

*The Renault V-6 engine in 1981, taken with a 24 mm wide-angle lens. Which produces its own deformation to add to the deformation of the engine. It was evening and beautifully lit ; the light was warm, the engine brand new. Good engine shots are rare. Too dirty, too much mess.*
**Canon AI, 24 mm, 1/125 sec.**

*Patrese at Monza in his Brabham. At the Parabolica. An extraordinary place for photographers. Because of the speed, the curve itself, the back ends hanging out, which is rare these days.*
**Canon F1, 200 mm, 1/60 sec.**

# FUTURE SHOCK: ECCLESTONE LOOKS TO FORMULA ONE'S NEXT DECADE

**Bernard Ecclestone, as we all know, with help from drivers, constructors, money and television, has changed the face of the sport. The silk scarves are gone; so is the gentleman amateur. To be replaced by money. Big money. But the man has even greater ambitions for the sport whose inner workings — not to speak of meanderings — he knows so well.**

*by ARI KAUFMAN*

We are sitting in the Ecclestone penthouse. It looks down on the River Thames. Not to speak of the Tate Gallery, the Houses of Parliament and the rest of London. For the gallery, Ecclestone would have much time. He is an aesthete, a collector, a man of imagination and taste. For parliament, somewhat less. Politics bore him. Politicians bore him even more.

But Ecclestone is a born politician himself. In the sense that his daily tasks resemble those of the average politician: back-room deals, vote-getting, self-promotion for the interests he supports, careful curry-combing of his constituency (FOCA specifically but Formula One in general) and much arm-bending of the more civilized sort.

He has also, he now recognizes, wasted a lot of time, money and energy in the cause of battling FISA. That battle over, the man is now moving to new worlds. The vision he has of the future of the sport is not necessarily one that will be shared by all, but it is a compelling vision and is based on facts. These facts include some startling statistics: a global television audience that keeps growing, a giant readership, spectators that outnumber, per event, almost any other sport.

The basic ingredient of the sport's commercial success is identification. *"Look,"* he says earnestly, leaning across an acre of sofa and coffee table, *"Ferrari's in the same class as Kodak, right? Everyone knows what a Ferrari is. In the six years we've been with them (we being Brabham) we've made Parmalat a household word. What other sport can do that for you?"*

It's true, of course. But one wonders whether the sport should be so identified with its sponsors. Where are the people? Surely it's people that count, isn't it? Not so, according to Ecclestone: *"If I were a sponsor, I'd always want to be involved with a team rather than a driver. Drivers can get hurt. Drivers change teams. If this year Piquet wears Coca Cola and next year Pepsi wants us, then where are we? A company can't follow a driver for the rest of that driver's life. With a team it gets steady identification."*

Harsh perhaps, but true. But are not drivers the ones who spearhead the identification? *"A lot of people know the name Brabham but haven't a clue who drives for us. Who knew Keke Rosberg? Suddenly he drives for Williams and he gets a lot of recognition. No, Formula One is a medium you can use any way you want. I'm not saying sponsors shouldn't back drivers, only that it is the sport itself that sponsors should be backing. It's straightforward advertising that normally you can't buy at all. For what other sport can you buy straight ink? That is, objective reports on an event that get your name to the public?*

*"The difficulty for sponsors lies elsewhere: it lies in the limitation of choice. How many teams are there in any given year that you can sponsor commercially, that is, with some hope of success? Sponsors get real mileage out of success. When they get that, they get immediate feedback. TV, 100 million readers in papers and magazines, recognition on five continents, radio... You name it, it comes in. With success."*

And the real success, according to the tiny millionaire with the flashing glasses and the bird-like eyes, comes from back-

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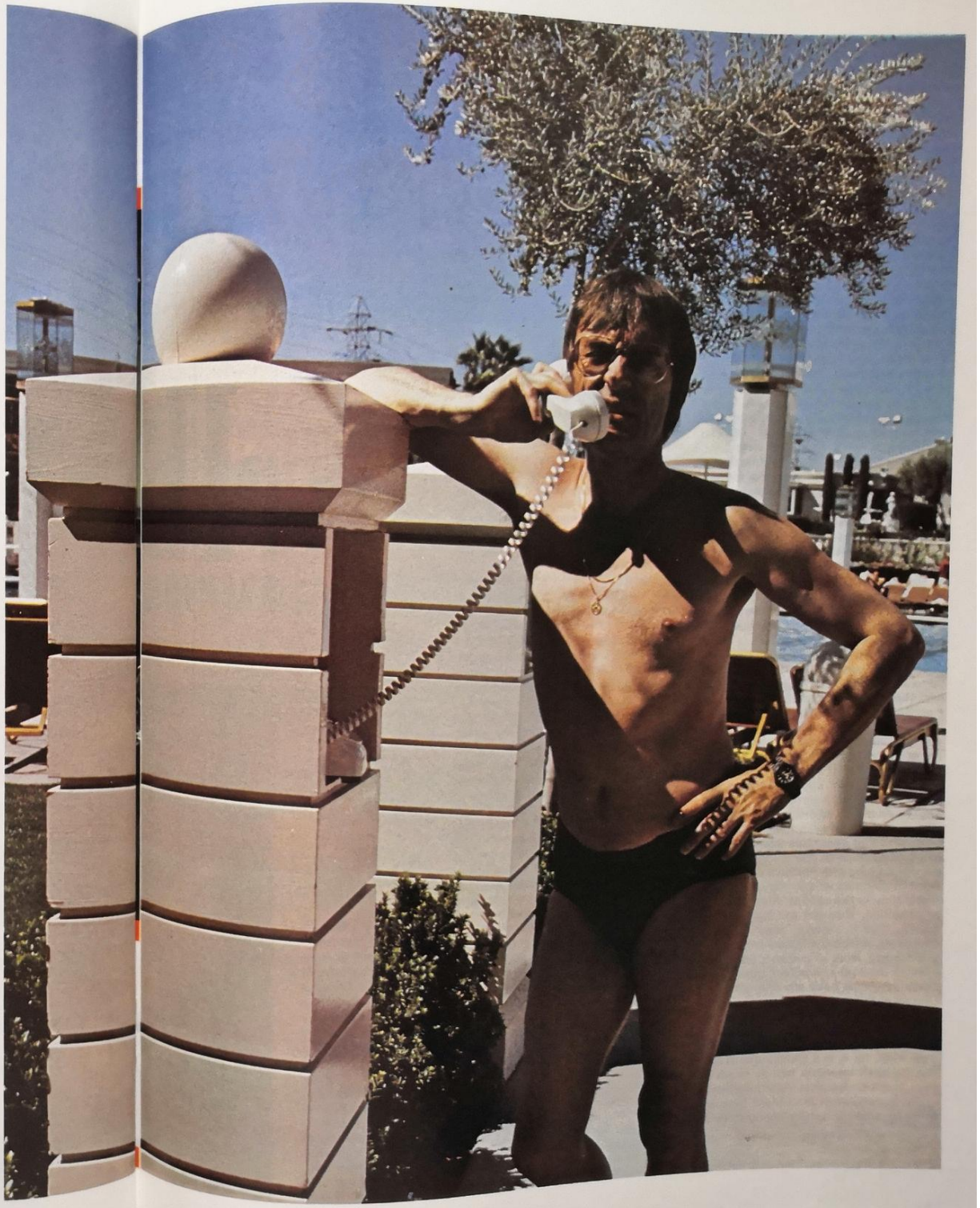


***He handles one business after another and his life consists of nothing more than a continuous succession of meetings and telephone calls. Nevertheless, Bernie Ecclestone is one of the most affable and relaxed of men around. His supposed inaccessibility is nothing more than a myth. (photo : B. Asset)***

ing the sport itself: as a whole. Sponsors buy a package, which is the sport itself; they buy into the world of Formula One, which is Bernie's baby.

Yes, but where does that leave the sportsman? The drivers? Hardly center-stage, according to him: *"Because the drivers are generally over-paid, they have no interest in going out and generating sponsorship; they just don't do it."* And to think that some of us who follow the sport had an idea drivers were reasonably greedy and sold off square inches of their nomex with some enthusiasm! Well, to be sure, when they get to the top, it becomes a different matter. Get in there when you're champion and *squeeze.* *"But even then,"* continues Ecclestone, with hardly a pause for breath, *"drivers today want to do their own thing; they have a life-style to live up to. They know all about short happy lives. Gilles Villeneuve had his helicopters and his power-boats. Ask him to do a commercial for the sport. Not on your life."*

Then sponsors should perhaps think of sponsoring things drivers fancy? *"I don't think that's important,"* answers Ecclestone. *"Sponsors don't need to spend a lot of money to get the best out of teams and drivers. What he needs is someone bright enough to see how it's done. Someone to see the driver's in the right place at the right time. Texaco was good with Hunt and its Master James campaign. And James was good. James was a natural anyway: he got into the gossip columns and that never hurt."*

Does that mean we ought to have more bon-vivants, drivers flying off with Koo Stark or Princess Caroline?

*"Frankly, I think we've attracted — or rather the huge sums of money we generate attract — the wrong sort of person. We tend to tie people up on long contracts because we make such an investment in them. Then if they're no good, you're stuck with them. If we were searching all the time, we'd throw up more characters... But it's not just characters that create interest. Look at Brabham this year: we only won three races but we generated ten times more publicity than Williams; we are always doing something new, and that generates interest.*

*"But to go back to characters — most people coming into Formula One come from God knows where; they arrive in a world they're not used to; they gets lots of attention; they get too big for their boots. Then, slowly, they acquire character. Which is different from being a character. How long does it take for a man to develop character? How many thirty-year-olds have any character?"*

One takes that to be a rhetorical question. Bernard Ecclestone clearly has character. A pronounced character. That of being his own man. And it is clear that, as his own man, he is in a transitional stage. Racing itself interests him as much as ever, but it is clear that those long hours spent arguing with Jean-Marie Balestre in his pyjamas and then having to twist the arms of his fellow-constructors are a thing of the past.

One of his first moves, then, is to diminish his participation as FOCA boss and increase his labours as super-star for the sport in general. To do that, he needs the spectacular. And Ecclestone has some in mind. Largely they have to do with changing the traditional image of the sport. Having races at little places like Zolder just because the Belgians have always had a Grand Prix has no real gut appeal for him. Whereas...

*"The best thing to happen in F1 is the new tracks. Places like Long Beach. Detroit, New York, Moscow. Anywhere. Let them invent a track and put up the money and we'll race anywhere. Here, I have to pull my colleagues after me. They say, Yugoslavia? Who wants to go to Yugoslavia? The answer is, television wants to go to Yugoslavia. Or Moscow or Peking. People might complain about Moscow. I say this is a commercial sport, not a political sport. Why shouldn't that part of the world have a race? Even the Soviet Union can do with good publicity. Everyone can. People in Russia who are into the Eighties want to be involved with us. And we have more large international companies who want to sponsor that race than any other. The whole thing will be a big PR exercise. The Japanese want to be in on it. People like Gordon Murray will be there in their jeans and shades lecturing in their polytechnics explaining how F1 uses the latest materials. It's not part of any deal; it's just what will happen."*

Of course television is the monster that wags the dog. Ecclestone acquired those rights for next to nothing when no one wanted them; he swopped them for a tiny drop in prize money (or rather in FOCA's demands for more prize money) from circuit owners who were singularly short-sighted. And what has television done for the sport? *"Everything,"* says Ecclestone with certainty. *"We've got ourselves networked around the world, it's made the sport acceptable, respectable. It wasn't easy at first. People forget what Formula One used to be. We've just plodded on and sent flowers when we've been thrown out and eventually it's worked. We should have spent all the money we spent on that stupid war with FISA promoting television and our sport."*

Clearly, his ideas on the future of the sport spell change. *"Europeans have had a big stranglehold on the sport, because of traditions. I believe in tradition, too. Some races, like Monaco or the British Grand Prix, you can't do without. But we are a world championship. On four continents and soon five. We are not a European championship... There are as many people in the United States as in Europe, so why complain if they have four races?*

*"I see a championship with maybe twenty-six races: only sixteen count for the championship, but you can race in as many as you want. You're obliged to do Indianapolis, Monaco, England, Germany, some of the trad venues, but the rest you do if you want. That would mean you could have a lot more teams and you'd wind up at some tracks with forty cars competing and you'have to sort out pre-qualifying. It would mean not only lots of new teams but also new countries. I'd like to see more German teams, some Japanese teams; we need drivers from more countries. The sport will benefit, so will the sponsors. Even little countries can take part: locally, it means instant recognition. Having more races simply widens the options for sponsors: PR for guests, direct advertising, new products. You name it. And small sponsors will be as well served as big ones."*

There is no stopping the little man's imagination. Obviously a new bug is biting. Or had it always bitten? *"No, I didn't start out knowing the commercial possibilities of the sport. When I took over Brabham, I was actually going to retire from business. But I loved racing and thought Brabham was a hell of a challenge. Take it over and see if I could make it work. Then I got into the business of creating FOCA and then I quickly saw we had a vehicle and it wasn't being used right. There were two ways to go back then: either you got in and commercialized the sport or you let it tick along and you went down the way the rest of motor sport has gone.*

*"The only cloud on the horizon is that most sponsors don't know what a wonderful thing they have. I make exception for Marlboro, who have progressed with us, and for Parmalat and maybe Elf. A lot of others have put a toe in the water and then gone out.*

*"Oh yes, and then you could lower the time of the race. The modern spectator's attention span is short. About 75 minutes would be perfect...*

*"Oh yes, and..."*

As I said, there's no way of stopping the man. His penthouse is an eagle's nest from which the little man sees large. Probably larger than most of the people about him. And when he's finished our sport, I expect he'll take over television and then — why not, he'd run it better than parliament — the country and... □

***Bernie Ecclestone's ambition is to transform Formula 1 into a truly planetary show. All his efforts are geared towards going to race in New York, Moscow, Peking or Yugoslavia. But in order to do just that, money is needed, still more money, it's always money... (photos : First Line and B. Asset)***

# STATISTICS

## FI 82

**WORLD CHAMPIONSHIP**

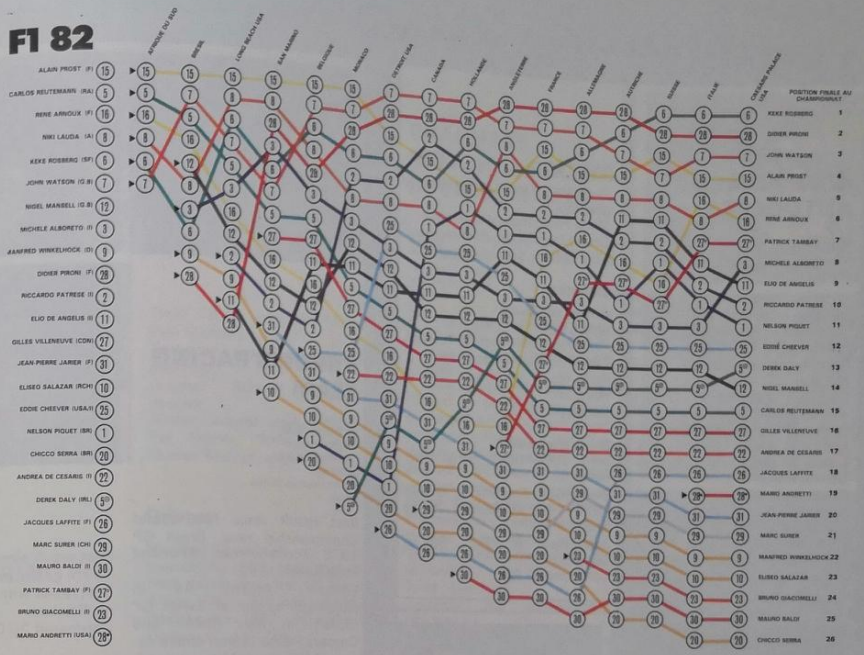
| | SOUTH AFRICA | BRAZIL | USA/LONG BEACH | SAN MARINO | BELGIUM | MONACO | USA/DETROIT | CANADA | HOLLAND | GREAT BRITAIN | FRANCE | GERMANY | AUSTRIA | SWITZERLAND | ITALY | USA/LAS VEGAS | TOTAL POINTS | REGULARITY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. ROSBERG | 2 | – | 6 | – | 6 | – | 3 | – | 4 | – | 2 | 4 | 6 | 9 | – | 2 | 44 | 10 |
| 2. PIRONI | – | 1 | – | 9 | – | 6 | 4 | – | 9 | 6 | 4 | – | – | – | – | – | 39 | 07 |
| WATSON | 1 | 6 | 1 | – | 9 | – | 9 | 4 | – | – | – | – | – | – | – | 3 | 39 | 08 |
| 4. PROST | 9 | 9 | – | – | – | – | – | – | – | 1 | 6 | – | – | 6 | – | 3 | 34 | 06 |
| 5. LAUDA | 3 | – | 9 | – | – | – | – | – | 3 | 9 | – | – | 2 | 4 | – | – | 30 | 06 |
| 6. ARNOUX | 4 | – | – | – | – | – | – | – | – | – | 9 | 6 | – | – | 9 | – | 28 | 04 |
| 7. TAMBAY | – | – | – | – | – | – | – | – | 4 | 3 | 9 | 3 | – | 6 | – | – | 25 | 05 |
| ALBORETO | – | 3 | 3 | 4 | – | – | – | – | – | – | – | 1 | 3 | – | – | 2 | 25 | 07 |
| 9. DE ANGELIS | – | – | – | 2 | – | 3 | 2 | – | 3 | – | 3 | – | – | 8 | 1 | – | 23 | 04 |
| 10. PATRESE | – | – | 4 | – | – | 9 | – | 6 | – | – | – | – | – | – | 2 | – | 21 | 04 |
| 11. PIQUET | – | – | – | – | 2 | – | – | – | – | 9 | 6 | – | – | – | 3 | – | 20 | 04 |
| 12. CHEEVER | – | – | – | – | 4 | – | 6 | – | – | – | – | – | – | – | – | 1 | 15 | 04 |
| 13. DALY | – | – | – | – | – | 1 | 2 | – | 2 | 2 | – | – | – | – | – | 1 | 08 | 05 |
| 14. MANSELL | – | 4 | – | – | – | 3 | – | – | – | – | – | – | – | – | – | – | 07 | 02 |
| 15. REUTEMANN | 6 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 06 | 01 |
| VILLENEUVE | – | – | – | 6 | – | – | – | – | – | – | – | – | – | – | – | – | 06 | 01 |
| 17. DE CESARIS | – | – | – | – | – | 4 | – | 1 | – | – | – | – | – | – | – | – | 05 | 02 |
| LAFFITE | – | – | – | – | – | – | 1 | – | – | – | – | – | 4 | – | – | – | 05 | 02 |
| 19. ANDRETTI | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 4 | 04 | 01 |
| 20. JARIER | – | – | – | 3 | – | – | – | – | – | – | – | – | – | – | – | – | 03 | 01 |
| SURER | – | – | – | – | – | – | – | 2 | – | – | – | 1 | – | – | – | – | 03 | 02 |
| 22. WINKELHOCK | 2 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 02 | 01 |
| SALAZAR | – | – | – | 2 | – | – | – | – | – | – | – | – | 2 | – | – | – | 02 | 01 |
| GIACOMELLI | – | – | – | – | – | – | – | – | – | – | – | – | – | 2 | – | – | 02 | 01 |
| BALDI | – | – | – | – | – | – | – | – | – | 1 | – | – | 1 | – | – | – | 02 | 02 |
| 26. SERRA | – | – | – | – | 1 | – | – | – | – | – | – | – | – | – | – | – | 01 | 01 |
| **Constructors.** | | | | | | | | | | | | | | | | | | |
| 1. FERRARI | – | 1 | – | 15 | – | 6 | 4 | – | 9 | 10 | 7 | 9 | 3 | – | 10 | – | 74 | 10 |
| 2. Mc LAREN | 4 | 6 | 10 | – | 9 | – | 9 | 4 | 3 | 9 | – | – | 2 | 4 | 3 | 6 | 69 | 12 |
| 3. RENAULT | 13 | 9 | – | – | – | – | – | – | – | – | 15 | 6 | – | 6 | 9 | 3 | 62 | 08 |
| 4. WILLIAMS | 8 | – | 6 | – | – | 1 | 5 | – | 6 | 2 | 2 | 4 | 6 | 9 | – | 3 | 58 | 12 |
| 5. BRABHAM(*) | – | – | 4 | – | – | 9 | – | 15 | 6 | – | – | – | – | – | 5 | – | 41 | 06 |
| 6. LOTUS | – | 4 | 2 | – | – | 5 | – | 3 | – | 3 | – | – | 9 | 1 | – | – | 30 | 08 |
| 7. TYRRELL | 3 | 3 | 4 | – | – | – | – | – | – | – | – | 1 | 3 | – | – | 2 | 25 | 07 |
| 8. TALBOT-LIGIER | – | – | – | – | – | – | – | 7 | – | – | – | – | – | 4 | – | 1 | 20 | 05 |
| 9. ALFA ROMEO | – | – | – | – | – | 4 | – | 1 | – | – | – | 2 | – | – | – | – | 07 | 03 |
| 10. ARROWS | – | – | – | – | – | – | – | 2 | 1 | – | – | 1 | 1 | – | – | – | 05 | 04 |
| 11. ATS | 2 | 2 | 2 | – | – | – | – | – | – | – | – | – | – | – | – | – | 04 | 02 |
| 12. OSELLA | – | – | 3 | – | – | – | – | – | – | – | – | – | – | – | – | – | 03 | 01 |
| 13. FITTIPALDI | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 01 | 01 |
| (*) BRABHAM-COSWORTH BRABHAM-BMW | – | – | 4 | – | – | 9 | – | 6 | – | – | – | – | – | – | – | – | 19 | 03 |
| | – | – | – | – | 2 | – | – | – | 9 | 6 | – | – | – | 5 | – | – | 22 | 04 |

## FI 82

Theoretical world championship based on grid positions.

| | SOUTH AFRICA | BRAZIL | USA/LONG BEACH | SAN MARINO | BELGIUM | MONACO | USA/DETROIT | CANADA | HOLLAND | GREAT BRITAIN | FRANCE | GERMANY | AUSTRIA | SWITZERLAND | ITALY | USA/LAS VEGAS | TOTAL POINTS | REGULARITY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. PROST | 2 | 9 | 3 | 6 | 9 | 3 | 9 | 4 | 6 | – | 6 | 6 | 4 | 9 | 2 | 9 | 87 | 15 |
| 2. ARNOUX | 9 | 3 | 4 | 9 | 6 | 9 | – | 6 | 9 | 1 | 9 | 4 | 2 | 6 | 1 | 6 | 84 | 15 |
| 3. PIQUET | 6 | – | 1 | – | – | – | – | 3 | 4 | 4 | 1 | 3 | 9 | 1 | 6 | – | 38 | 10 |
| 4. PIRONI | 1 | – | – | 3 | – | 2 | 3 | 9 | 3 | 3 | 4 | 9 | – | – | – | – | 37 | 09 |
| 5. PATRESE | 3 | – | – | – | – | 6 | – | – | – | 6 | 3 | 1 | 6 | 4 | 3 | 2 | 34 | 09 |
| 6. ROSBERG | – | 4 | – | – | 4 | 1 | 4 | – | – | 9 | – | – | 1 | – | – | 1 | 24 | 07 |
| 7. DE CESARIS | – | – | 9 | – | 1 | – | 6 | – | – | – | – | – | – | 2 | – | – | 18 | 04 |
| LAUDA | – | 2 | 6 | – | 3 | – | – | – | 2 | 2 | – | – | – | 3 | – | – | 18 | 06 |
| 9. VILLENEUVE | 4 | 6 | – | 4 | – | – | – | – | – | – | – | – | – | – | – | – | 14 | 03 |
| 10. TAMBAY | – | – | – | – | – | – | – | – | – | 1 | – | 2 | 2 | 3 | – | 4 | 12 | 05 |
| 11. GIACOMELLI | – | – | 2 | 1 | – | 4 | 1 | 2 | – | – | – | – | – | – | – | – | 10 | 05 |
| 12. ANDRETTI | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 9 | – | 09 | 01 |
| 13. ALBORETO | – | – | – | 2 | 2 | – | – | – | – | – | – | – | – | – | – | 4 | 08 | 03 |
| 14. CHEEVER | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 3 | – | 03 | 01 |
| 15. WINKELHOCK | – | – | – | – | – | – | 2 | – | – | – | – | – | – | – | – | – | 02 | 01 |
| 16. REUTEMANN | – | 1 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 01 | 01 |
| WATSON | – | – | – | – | – | – | – | – | 1 | – | – | – | – | – | – | – | 01 | 01 |
| **Constructors.** | | | | | | | | | | | | | | | | | | |
| 1. RENAULT | 11 | 12 | 7 | 15 | 15 | 12 | 9 | 10 | 15 | 1 | 15 | 10 | 6 | 15 | 3 | 15 | 171 | 16 |
| 2. FERRARI | 5 | 6 | – | 7 | – | 2 | 3 | 9 | 4 | 3 | 6 | 11 | 3 | – | 13 | – | 72 | 12 |
| BRABHAM(*) | 9 | – | 1 | – | – | 6 | – | 3 | 4 | 10 | 4 | 4 | 15 | 5 | 9 | 2 | 72 | 12 |
| 4. ALFA ROMEO | – | – | 11 | 1 | 1 | 4 | 7 | 2 | – | – | – | – | – | 2 | – | – | 28 | 07 |
| 5. WILLIAMS | – | 5 | – | – | 4 | 1 | 4 | – | – | 9 | – | – | 1 | – | – | 1 | 25 | 07 |
| 6. Mc LAREN | – | 2 | 6 | – | 3 | – | – | 1 | 2 | 2 | – | – | – | 3 | – | – | 19 | 07 |
| 7. TYRRELL | – | – | – | 2 | 2 | – | – | – | – | – | – | – | – | – | – | 4 | 08 | 03 |
| 8. TALBOT-LIGIER | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 3 | 03 | 01 |
| 9. ATS | – | – | – | – | – | – | 2 | – | – | – | – | – | – | – | – | – | 02 | 01 |
| (*) BRABHAM-COSWORTH BRABHAM-BMW | – | – | 1 | – | – | 6 | – | – | – | – | – | – | – | – | – | – | 07 | 02 |
| | 9 | – | – | – | – | – | – | 3 | 4 | 10 | 4 | 4 | 15 | 5 | 9 | 2 | 65 | 10 |

# THE EVOLUTION OF THE CHAMPIONSHIP




## FI 82

Theoretical world championship based on positions half-way through the race.

| | SOUTH AFRICA | BRAZIL | USA/LONG BEACH | SAN MARINO | BELGIUM | MONACO | USA/DETROIT | CANADA | HOLLAND | GREAT BRITAIN | FRANCE | GERMANY | AUSTRIA | SWITZERLAND | ITALY | USA/LAS VEGAS | TOTAL POINTS | REGULARITY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. PROST | 9 | 6 | – | – | – | 9 | – | – | – | – | 6 | – | 6 | 9 | 4 | 9 | 58 | 08 |
| 2. ROSBERG | 3 | – | 6 | – | 9 | 2 | 9 | – | 4 | – | 2 | 3 | 2 | 3 | – | 2 | 45 | 11 |
| 3. ARNOUX | 6 | – | – | 6 | – | – | – | – | – | – | 9 | 6 | – | 6 | 9 | – | 37 | 07 |
| 4. PATRESE | – | 9 | 2 | – | 4 | 6 | – | 6 | – | – | – | – | 9 | 1 | – | – | 42 | 06 |
| 5. PIRONI | 1 | 1 | – | 4 | – | 4 | 6 | – | 9 | 4 | 4 | – | – | – | – | – | 33 | 08 |
| 6. WATSON | 2 | 4 | – | – | 6 | – | 2 | 2 | – | – | – | 4 | – | – | 2 | 4 | 26 | 08 |
| 7. LAUDA | – | – | 9 | – | – | 3 | – | 2 | 9 | – | – | – | 2 | – | – | – | 25 | 05 |
| 8. PIQUET | – | – | – | – | – | – | – | – | – | 9 | 6 | – | – | 3 | 4 | – | 22 | 04 |
| TAMBAY | – | – | – | – | – | – | – | – | – | 3 | 1 | 3 | 9 | – | – | 6 | 22 | 04 |
| 10. ALBORETO | – | – | 4 | 3 | – | 1 | – | – | – | – | 1 | 1 | – | – | – | 6 | 16 | 06 |
| 11. CHEEVER | – | – | 3 | – | 2 | – | 4 | 3 | – | – | – | – | – | – | – | 3 | 15 | 05 |
| 12. VILLENEUVE | – | – | – | 9 | – | – | – | – | – | – | – | – | – | – | – | – | 09 | 01 |
| DE CESARIS | – | – | – | – | – | – | 3 | – | 4 | – | 2 | – | – | – | – | – | 09 | 03 |
| 14. DE ANGELIS | – | 1 | – | – | – | – | – | – | – | 3 | – | – | 4 | – | – | – | 08 | 03 |
| 15. WARWICK | – | – | – | – | – | – | – | – | – | 6 | – | – | – | – | – | – | 06 | 01 |
| DALY | – | – | – | – | – | – | 3 | – | 1 | 1 | – | – | – | – | – | 1 | 06 | 04 |
| 17. LAFFITE | – | – | – | – | – | – | 1 | 1 | – | – | – | 2 | 1 | – | – | – | 05 | 04 |
| 18. REUTEMANN | 4 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 04 | 01 |
| 19. MANSELL | – | 3 | – | – | – | – | – | – | – | – | – | – | – | – | – | 3 | 03 | 01 |
| ANDRETTI | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 03 | 01 |
| 21. WINKELHOCK | – | 2 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 02 | 01 |
| JARIER | – | – | 2 | – | – | – | – | – | – | – | – | – | – | – | – | – | 02 | 01 |
| 23. SALAZAR | – | – | – | 1 | – | – | – | – | – | – | – | – | – | – | – | – | 01 | 01 |
| 24. GIACOMELLI | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 1 | – | 01 | 01 |
| **Constructors.** | | | | | | | | | | | | | | | | | | |
| 1. RENAULT | 15 | 6 | – | 6 | – | 9 | – | – | – | – | 15 | 6 | 6 | 15 | 13 | 9 | 100 | 10 |
| 2. FERRARI | 1 | 1 | – | 13 | – | 4 | 6 | – | 12 | 5 | 7 | 9 | – | – | 9 | – | 67 | 10 |
| 3. BRABHAM(*) | – | 9 | 2 | – | 4 | 6 | – | 15 | 6 | – | – | – | 12 | 5 | – | – | 59 | 08 |
| 4. WILLIAMS | 7 | – | 6 | – | 12 | 2 | 9 | 1 | 5 | – | 2 | 3 | 2 | 3 | – | 3 | 55 | 12 |
| 5. Mc LAREN | 2 | 4 | 9 | – | 6 | – | 5 | 2 | 2 | 9 | – | 4 | – | 2 | 2 | 4 | 51 | 12 |
| 6. TALBOT-LIGIER | – | – | 3 | – | 3 | – | 5 | 3 | – | – | 2 | 1 | – | – | 3 | | 20 | 07 |
| 7. TYRRELL | – | – | 4 | 3 | 1 | – | – | – | – | 1 | 1 | – | – | – | 6 | | 16 | 06 |
| 8. LOTUS | 3 | 1 | – | – | – | – | – | – | 3 | – | 4 | – | – | – | – | | 11 | 04 |
| 9. ALFA ROMEO | – | – | – | – | 3 | – | 4 | 2 | – | – | – | – | – | 1 | – | | 10 | 04 |
| 10. TOLEMAN | – | – | – | – | – | – | – | – | 6 | – | – | – | – | – | – | | 06 | 01 |
| (*) BRABHAM-COSWORTH BRABHAM-BMW | 9 | – | 2 | – | – | 6 | – | 6 | – | – | – | – | – | – | – | | 23 | 04 |
| | – | – | – | 4 | – | – | 9 | 6 | – | – | – | 12 | 5 | – | – | | 36 | 05 |

## FI 82

Theoretical championship based on fastest laps in the race.

| | SOUTH AFRICA | BRAZIL | USA/LONG BEACH | SAN MARINO | BELGIUM | MONACO | USA/DETROIT | CANADA | HOLLAND | GREAT BRITAIN | FRANCE | GERMANY | AUSTRIA | SWITZERLAND | ITALY | USA/LAS VEGAS | TOTAL POINTS | REGULARITY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. PROST | 9 | 9 | – | – | – | 4 | – | – | 1 | 4 | 3 | 3 | 2 | 9 | 6 | 6 | 56 | 11 |
| 2. PIQUET | – | – | – | – | – | – | – | 2 | 6 | 2 | 6 | 9 | 9 | 4 | – | – | 38 | 07 |
| 3. ARNOUX | 6 | – | 2 | 6 | – | – | 2 | 1 | – | – | 4 | 4 | – | 3 | 9 | – | 37 | 09 |
| 4. PATRESE | – | 1 | – | – | – | 9 | – | 6 | – | – | 9 | 2 | 6 | – | 3 | – | 36 | 07 |
| 5. WATSON | – | 3 | 6 | – | 9 | – | 9 | – | – | – | – | 1 | – | 2 | – | 4 | 34 | 07 |
| 6. PIRONI | 3 | 6 | – | 4 | – | 6 | 1 | 9 | 2 | – | 2 | – | – | – | – | – | 33 | 08 |
| 7. LAUDA | – | 4 | 9 | – | – | – | 6 | – | – | 3 | – | – | – | 1 | – | 2 | 25 | 06 |
| 8. DE CESARIS | 4 | – | 4 | – | 4 | 2 | – | 4 | – | – | – | – | – | – | – | – | 18 | 05 |
| 9. ROSBERG | – | – | – | 2 | – | – | – | – | 4 | – | – | – | 4 | 6 | 1 | – | 17 | 05 |
| 10. TAMBAY | – | – | – | – | – | – | – | – | – | 1 | 6 | 3 | – | 4 | – | – | 14 | 04 |
| 11. ALBORETO | – | – | – | 3 | – | 1 | – | – | – | – | – | – | – | – | 9 | – | 13 | 03 |
| DALY | – | – | – | – | 1 | 3 | – | 3 | 6 | – | – | – | – | – | – | – | 13 | 04 |
| CHEEVER | – | – | – | 3 | – | 4 | 3 | – | – | – | – | – | – | – | 3 | – | 13 | 04 |
| 14. VILLENEUVE | 1 | – | 9 | – | – | – | – | – | – | – | – | – | – | – | – | – | 10 | 02 |
| WARWICK | – | – | – | – | – | – | – | – | – | 9 | 1 | – | – | – | – | – | 10 | 02 |
| HENTON | – | – | – | – | – | – | – | – | – | – | – | 9 | – | – | 1 | – | 10 | 02 |
| 17. GIACOMELLI | – | 2 | 3 | 1 | – | 9 | – | – | – | – | – | – | – | – | – | – | 09 | 04 |
| 18. LAFFITE | – | – | 1 | 6 | – | – | – | – | – | – | – | – | – | – | – | – | 07 | 02 |
| 19. REUTEMANN | 2 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | 02 | 01 |
| JARIER | – | – | 2 | – | – | – | – | – | – | – | – | – | – | – | – | – | 02 | 01 |
| ANDRETTI | – | – | – | – | – | – | – | – | – | – | – | – | – | 2 | – | – | 02 | 01 |
| 22. DE ANGELIS | – | – | – | – | – | – | – | – | – | – | 1 | – | – | – | – | – | 01 | 01 |
| **Constructors.** | | | | | | | | | | | | | | | | | | |
| 1. RENAULT | 15 | 9 | 2 | 6 | – | 4 | 2 | 1 | 1 | 4 | 7 | 7 | 2 | 12 | 15 | 6 | 93 | 15 |
| 2. BRABHAM(*) | – | 1 | – | – | – | 9 | – | 8 | 6 | 2 | 15 | 11 | 15 | 7 | – | – | 74 | 09 |
| 3. Mc LAREN | – | 7 | 15 | – | 9 | – | 15 | – | – | 3 | – | 1 | – | 3 | – | 6 | 59 | 08 |
| FERRARI | 4 | 6 | – | 13 | – | 6 | 1 | 9 | 2 | – | 3 | 6 | 3 | – | 6 | – | 59 | 11 |
| 5. WILLIAMS | 2 | – | – | – | 3 | 3 | – | – | 7 | 6 | – | – | 4 | 6 | 1 | – | 32 | 08 |
| 6. ALFA ROMEO | 4 | 2 | 7 | 1 | 4 | 2 | 3 | 4 | – | – | – | – | – | – | – | – | 27 | 08 |
| 7. TYRRELL | – | – | 3 | – | 1 | – | – | – | 9 | – | – | – | – | – | 10 | | 23 | 04 |
| 8. TALBOT-LIGIER | – | – | 1 | – | 9 | – | 4 | 3 | – | – | – | – | – | – | 3 | | 20 | 05 |
| 9. TOLEMAN | – | – | – | – | – | – | – | 9 | 1 | – | – | – | – | – | – | | 10 | 02 |
| 10. OSELLA | – | – | 2 | – | – | – | – | – | – | – | – | – | – | – | – | | 02 | 01 |
| 11. LOTUS | – | – | – | – | – | – | – | – | – | 1 | – | – | – | – | – | | 01 | 01 |
| (*)BRABHAM-COSWORTH BRABHAM-BMW | 9 | 2 | – | – | 6 | – | 6 | – | – | – | – | – | – | – | – | | 23 | 04 |
| | – | – | – | 4 | – | 9 | 6 | – | – | 12 | 5 | – | – | – | – | | 36 | 05 |

# Cockpits

## ALFA ROMEO AUTODELTA

Address :
Via Enrico Fermi 7,
20019 Settimo Milanese
Italy.

10 wins since first World Championship race, British GP 1950 (in competition since Targa Florio 1911).
Best result in 1982 : 3rd at Monaco.
*Chassis :* Alfa Romeo 179D in aluminium in South Africa, Alfa Romeo 182 or 182B in carbon fibre thereafter. Alfa Romeo 182T tested by de Cesaris during practice for Italian GP.
*Engines :* V12 Alfa Romeo Autodelta 1260, 2995 cc, atmospheric. V8 Alfa Romeo Autodelta, 1496 cc, two KKK turbochargers, in 182T driven by de Cesaris at Italian GP practice.
*Tyres :* Michelin.
*Technical and administrative directors :*
Mario Felici, managing director.
Gerard Ducarouge, chief engineer.
Luigi Corbari, team manager.

### Drivers

**Andrea de Cesaris**
born 31/05/1959, Rome (I).
Best result since first GP (Canada 1980) : 3rd at Monaco 1982.
Best result in 1982 : 3rd at Monaco.
Contested 32 GPs.

**Bruno Giacomelli**
born 10/09/1952, Borgo Poncarale (I).
Best result since first GP at Italy 1977 : 3rd at Caesars Palace 1981.
Best result in 1982 : 5th in Germany.
Contested 55 GPs.

## ARROWS RACING TEAM

Address :
39 Barton Road,
Water Eaton
Industrial Estate,
Bletchley,
Milton Keynes, Bucks.,
Britain.

Best result since first World Championship race, Brazil GP 1978 : 2nd in Sweden 1978, 2nd Long Beach 1980.
*Chassis :* Arrows A4 in aluminium except at Swiss GP (Surer), in Italy (Baldi) and Caesars Palace (Surer) where Arrows A5 in aluminium was used.
*Engine :* V8 Cosworth, 2993 cc, atmospheric.
*Tyres :* Pirelli.
*Technical and administrative directors :*
Jackie Oliver, managing director.
Dave Wass, chief engineer.
Alan Rees, team manager.

### Drivers

**Brian Henton**
(until Long Beach GP)
born 19/09/1946 at Donington (GB)
Best result since first GP (Britain 1975) : 7th in Germany 1982.
Best result with Arrows in 1982 : no finishes.
Contested 20 GPs.

**Mauro Baldi**
born 31/01/1954, Reggio Emilia (I).
Best result since first GP (Brazil 1982) : 6th in Holland, 1982.
Contested 10 GPs.

**Marc Surer**
born 18/09/1951, Aresdorf (CH)
Best result since first GP (Watkins Glen 1979) : 4th in Brazil, 1981.
Best result in 1982 : 5th in Canada.
Contested 35 GPs.

## A.T.S. ENGINEERING

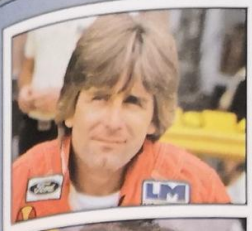
Address :
Unit 2a Telford Road
Industrial Estate,
Bicester, Oxon.,
Britain.

Best result since first World Championship race, Long Beach 1977 : 5th at Watkins Glen 1979, at Brazil and San Marino 1982.
*Chassis :* ATS D6/HGS1 in aluminium.
*Engine :* V8 Cosworth DFV, 2993 cc, atmospheric.
*Tyres :* Avon until San Marino, then Michelin.
*Technical and administrative directors :*
Gunther Schmid, managing director.
Alistair Caldwell, team manager.
Pat Palmer, Donald Hallyday, Gustav Brunner, engineers.

### Drivers

**Manfred Winkelhock**
born 06/10/1952, Waiblingen (D).
Best result since first GP (South Africa 1982) : 5th in Brazil 1982.
Best result in 1982 : 5th in Brazil.
Contested 13 GPs.

**Eliseo Salazar**
born 04/11/1954, Santiago de Chile (RCH).
Best result since first GP (San Marino 1981) : 5th at San Marino 1982.
Best result in 1982 : 5th at San Marino.
Contested 22 GPs.



## BRABHAM — MOTOR RACING DEVELOPMENTS

Address :
Poebuck House,
Cox Lane, Chessington,
Surrey KT9 1DG
Britain

28 wins since first World Championship race, German GP 1962
2 wins in 1982 : Monaco and Canada
*Chassis :* Brabham BT49D in aluminium in Brazil, Long Beach, Monaco (Patrese), Detroit (Patrese) and Canada (Patrese), BT50 in aluminium for the remainder.
*Engines :* V8 Cosworth DFV, 2993 cc, atmospheric, in Brazil, Long Beach, Monaco (Patrese), Detroit (Patrese) and Canada (Patrese). 4 cylinder in-line BMW M12/13, 1499cc, KKK turbocharged for remainder.
*Tyres :* Goodyear.
*Technical and administrative directors :*
Bernard Ecclestone, managing director,
Gordon Murray, chief engineer
Herbie Blash, team manager.

### Drivers

**Nesion Piquet**
born 17/08/1952, Rio de Janeiro (BR)
7 wins since first GP (Germany 1978).
1 win in 1982 : Canada.
Contested 62 GPs.

**Riccardo Patrese**
born 17/04/1954, Padua (I)
1 win since first GP (Monaco 1977)
1 win in 1982 : Monaco
Contested 81 GPs.

## ENSIGN RACING

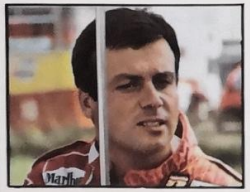
Address :
Ensign House,
Trent Valley,
Lichfield, Staffs,
Britain.

Best result since first World Championship race, French GP 1973 : 4th in Brazil, 1981.
Best result in 1982 : 8th in Germany.
*Chassis :* Ensign MN179 in aluminium at South African GP, Ensign MN182 in aluminium and carbon fibre thereafter.
*Engine :* V8 Cosworth DFV, 2993 cc, atmospheric.
*Tyres :* Avon until Monaco, then Michelin.
*Technical and administrative directors :*
Morris Nunn, managing director and team manager.
Nigel Bennett, chief engineer.

### Driver

**Roberto Guerrero**
born 16/11/1958 at Medellin (COL)
Best result since first GP (Brazil 1982) : 8th in Germany 1982.
Contested 9 GPs.

# Cockpits



## SCUDERIA FERRARI

Address :
Casella Postale 589,
41 100 Modena,
Italy

83 wins since first GP in Turin 1948 (ran private team since 1929).
3 wins in 1982 : San Marino, Holland, Germany.
*Chassis :* Ferrari 126C2 in aluminium.
*Engine :* V6 Ferrari, 1496 cc, two KKK turbochargers.
*Tyres :* Goodyear.
*Technical and administrative directors :*
Enzo Ferrari, managing director
Mauro Forghieri, chief engineer
Harvey Postlethwaite, research and development engineer.
Marco Piccinini, team manager.

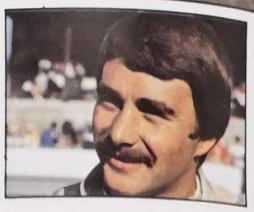
### Drivers

**Didier Pironi**
(until French GP)
born 26/03/1952, Paris (F)
3 wins since first GP (Argentine 1978).
2 wins in 1982 : San Marino and Holland.
Contested 69 GPs.

**Gilles Villeneuve**
(until San Marino GP)
born 18/01/1950, Chambly (CDN), died 08/05/1982, Zolder.
6 wins since first GP (Britain 1977).
Best result in 1982 : 2nd at San Marino.
Contested 67 GPs.

**Patrick Tambay**
(from Dutch GP)
born 25/06/1949, Paris (F)
1 win since first GP (Britain 1977).
1 win in 1982 : Germany.
Contested 55 GPs.

**Mario Andretti**
(from Italien GP)
born 28/02/1940, Montan (I), American citizen.
12 wins since first GP (US 1968).
Best result with Ferrari in 1982 : 3rd in Italy.
Contested 128 GPs.



## TEAM LOTUS

Address :
Wymondham, Norfolk NR18 9RS
Britain.

7 wins since first World Championship race, Monaco 1958.
1 win in 1982 : Austria.
*Chassis :* Lotus 87 in carbon fibre for South Africa, Lotus 91 in carbon fibre thereafter.
*Engine :* V8 Cosworth DFV, 2993 cc, atmospheric.
*Tyres :* Goodyear.
*Technical and administrative directors :*
Colin Chapman, managing director.
Martin Ogilvie, chief engineer.
Peter Warr, team manager.

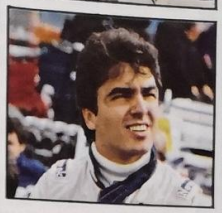
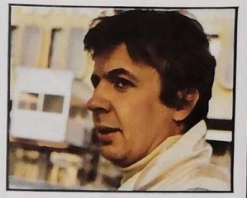
### Drivers

**Elio de Angelis**
born 26/03/1958, Rome (I).
1 win since first GP (Argentine 1979) : Austria 1982.
1 win in 1982 : Austria.
Contested 57 GPs.

**Nigel Mansell**
(missed Dutch and French GPs, injured wrist)
born 08/08/1954, Upton on Severn (GB)
Best result since first GP (Austria 1980) : 3rd in Belgium 1981 and Brazil 1982.
Best result in 1982 : 3rd in Brazil.
Contested 28 GPs.

**Roberto Moreno**
(Dutch GP did not qualify)
born 11/02/1959 (BR)
Contested no GPs.

**Geoff Lees**
(French GP)
born 01/05/1951, Atherstone (GB).
Best result since first GP (Germany 1979) : 7th in Germany 1979.
Best result with Lotus in 1982 : 12th in France.
Contested 5 GPs.

## MARCH GRAND PRIX

Address :
5 Telford Road
Industrial Estate,
Bicester, Oxon.
Britain.

3 wins since first World Championship race, South African GP 1970.
Best result in 1982 : 7th in Detroit.
*Chassis :* March 821 in aluminium (stiffened with carbon fibre panels from Detroit).
*Engine :* V8 Cosworth DFV, 2993 cc, atmospheric.
*Tyres :* Pirelli until Belgium, Avon for Monaco and Swiss, Michelin from Italy.
*Technical and administrative directors :*
John MacDonald, managing director.
Adrian Reynard, chief engineer until Swiss GP.
David Kelly, engineer from Italian GP.
Michael Ralph, team manager.

### Drivers

**Jochen Mass**
born 30/09/1946, Dorfen (D).
1 win since first GP (Britain 1973) : Spain 1975.
Best result in 1982 : 7th at Detroit.
Contested 107 GPs.

**Raul Boesel**
born 04/12/1957, Curitiba (BR).
Best result since first GP (South Africa 1982) : 9th in Belgium 1982.
Best result in 1982 : 9th in Belgium.
Contested 10 GPs.

**Rupert Keegan**
(from German GP)
born 26/02/1955, Westcliff (GB).
Best result since first GP (Spain 1977) : 7th in Austria 1977.
Best result in 1982 : 12th at Caesars Palace.
Contested 25 GPs.

**Emilio de Villota**
(from Belgian GP to Dutch GP - never qualified)
born 26/07/1946, Madrid (SP)
Best result since first GP (Spain 1977 – 13th)
Best result in 1982 : no qualifications.
Contested 2 GPs.

## FITTIPALDI AUTOMOTIVE

Address :
36 Bennett Road,
Reading, Berkshire,
RG2 0QX
Britain

Best result since first World Championship race, Argentine GP 1975 : 2nd in Brazil 1978.
Best result in 1982 : 6th in Belgium

*Chassis :* Fittipaldi F8D in aluminium until British GP, Fittipaldi F9 in aluminium thereafter.
*Engine :* V8 Cosworth DFV, 2993 cc, atmospheric.
*Tyres :* Pirelli
*Technical and administrative directors :*
Emerson Fittipaldi, managing director and team manager.
Ricardo Divila, chief engineer.

### Driver

**Chico Serra**
born 03/02/1957 in Sao Paulo (BR)
Best result since first GP (Long Beach 1981) : 6th in Belgium 1982.
Best result in 1982 : 6th in Belgium.
Contested 14 GPs.

## MC LAREN INTERNATIONAL

Address :
Boundary Road,
Woking, Surrey,
Britain.

29 wins since first World Championship race, Monaco GP 1966.
4 wins in 1982 : Long Beach, Belgium, Detroit, Britain.
*Chassis :* McLaren MP4/1B in carbon fibre built by Hercules in Salt Lake City, U.S.
*Engine :* V8 Cosworth DFV, 2993 cc, atmospheric.
*Tyres :* Michelin.
*Technical and administrative directors :*
Ron Dennis and Teddy Mayer, joint managing directors.
Tyler Alexander, technical director
John Barnard, chief engineer.

### Drivers

**John Watson**
born 14/05/1946 in Belfast (GB)
4 wins since first GP (Britain, 1973).
2 wins in 1982 : Belgium and Detroit.
Contested 137 GPs.

**Niki Lauda**
born 22/09/1949, Vienna (A)
19 wins since first GP (Austria 1971)
2 wins in 1982 : Long Beach and Britain.
Contested 127 GPs.

## OSELLA SQUADRA CORSE

Address :
rua Brandizzo 245,
Volpiano, Torino,
Italy.

Best result since first World Championship race, South African GP 1980 : 4th at San Marino 1982.
Best result in 1982 : 4th at San Marino.
*Chassis :* Osella FA1D in aluminium.
*Engine :* V8 Cosworth DFV, 2993 cc, atmospheric.
*Tyres :* Pirelli.
*Technical and administrative directors :*
Enzo Osella, managing director.
Franco Palazzoli, team manager (until Canadian GP).
Herve Guilpin, chief engineer.

### Drivers

**Jean-Pierre Jarier**
born 10/07/1946, Charenton (F).
Best result since first GP (Italy 1971) : 3rd at Monaco 1974, South Africa and Britain 1979.
Best result in 1982 : 4th at San Marino.
Contested 120 GPs.

**Riccardo Paletti**
born 15/06/1956, Milan (I).
died 13/06/1982 at Montreal.
Best result since first GP (San Marino 1982) : no finishes.
Best result in 1982 : no finishes.
Contested 2 GPs.

## RENAULT SPORT

Addresses :
Renault Sport,
34, quai du Point-du-Jour,
92109 Boulogne-Billancourt,
France.

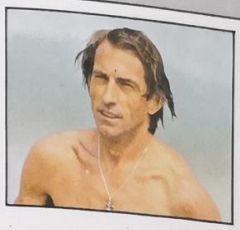
Usine Amedee Gordini,
1, av. du Président-Kennedy,
91170 Viry-Châtillon,
France

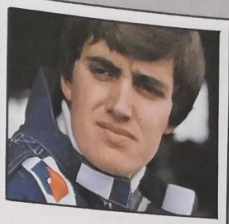
11 wins since first World Championship race, British GP 1977. 4 wins in 1982 : South Africa, Brazil, France, Italy.
*Chassis :* Renault RE30B in aluminium.
*Engine :* V6 Renault EF1, 1492 cc, two KKK turbochargers.
*Tyres :* Michelin.
*Technical and administrative directors :*
Gerard Larrousse, competitions director.
Bernard Dudot, technical director.
Michel Tetu, chassis engineer.
Jean Sage, team manager.

### Drivers

**Alain Prost**
born 24/02/1955, Saint-Chamond (F).
5 wins since first GP (Argentina 1980).
2 wins in 1982 : South Africa and Brazil.
Contested 42 GPs.

**René Arnoux**
born 04/08/1948, Grenoble (F).
4 wins since first GP (Belgium 1978).
2 wins in 1982 : France and Italy.
Contested 64 GPs.





## EQUIPE TALBOT-LIGIER

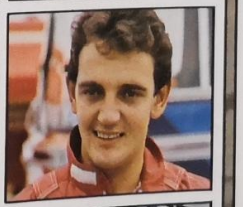
Address :
105 route d'Hauterive,
03200 Abrest, Vichy
France

8 wins since first World Championship race, Brazil 1976 (as Equipe Ligier).
Best result in 1982 : 2nd at Detroit.
*Chassis :* Ligier JS17 in aluminium in South Africa, Brazil, Long Beach, Belgium, Detroit, Canada, Holland (Lafitte) and Britain (Cheever), JS19 in aluminium reinforced with carbon fibre panels elsewhere.
*Engine :* V12 Matra MS81, 2993cc, atmospheric.
*Tyres :* Michelin.
*Technical and administrative directors :*
Guy Ligier, managing director.
Jean-Pierre Jabouille, team manager.
Michel Beaujon, engineer.
Jean-Claude Guenard, head of testing and development service.
Lionel Hublet, assistant team manager.

### Drivers

**Eddie Cheever**
born 10/01/1957, Phoenix (USA).
Best result since first GP (South Africa 1978) : 2nd at Detroit 1982.
Best result in 1982 : 2nd at Detroit.
Contested 39 GPs.

**Jacques Laffite**
born 21/11/1943, Paris (F).
6 wins since first GP (Germany 1974).
Best result in 1982 : 3rd in Austria.
Contested 123 GPs.



## THEODORE RACING

Address :
Bannerley Road,
Garretts Green
Industrial Estate,
Birmingham 33,
Britain.

Best result since first World Championship race, South African GP 1978 : 6th at Long Beach 1981 (ran a private team from British GP 1977).
Best result in 1982 : 14th in South Africa.
*Chassis :* Theodore TYO1 in aluminium in South Africa, Theodore TY02 in aluminium thereafter.
*Engine :* V8 Cosworth DFV, 2993 cc, atmospheric.
*Tyres :* Avon until Monaco, then Goodyear.
*Technical and administrative directors :*
Theodore ("Teddy") Yip, managing director.
Tony Southgate, chief engineer.
Sid Taylor, team manager.

### Drivers

**Derek Daly**
(until Long Beach GP)
born 11/03/1953, Dublin (IRL).
Best result since first GP (Britain 1976) : 4th in Argentina and Britain 1980.
Best result with Theodore in 1982 : 14th in South Africa.
Contested 49 GPs.

**Jan Lammers**
(from Belgian GP to French GP, except for Canada)
born 02/06/1956, Zandvoort (NL).
Best result since first GP (Argentine 1979) : 9th in Canada 1979.
Best result in 1982 : no finishes.
Contested 21 GPs.

**Geoff Lees**
(Canadian GP)
born 01/05/1951, Atherstone (GB)
Best result since first GP (Germany 1979) : 7th in Germany 1979.
Best result with Theodore in 1982 : did not finish.
Contested 5 GPs.

**Tommy Byrne**
(from German GP)
born 10/05/1958, Dugdale (IRL)
Best result since first GP (Austria 1982) : no finishes.
Best result in 1982 : no finishes.
Contested 2 GPs.

# Cockpits





## TOLEMAN MOTORSPORT

Address :
Witney Trading Estate, Unit 9,
Station Lane,
Witney, Oxon.,
Britain.

Best result since first World Championship race, Italian GP 1981 : 10th in Italy 1981 and Germany 1982.
*Chassis :* Toleman TG181C in aluminium, Toleman 183 in carbon fibre for Warwick from Italy.
*Engine :* 4 cylinder in-line Hart 415T, 1494 cc, single Garrett turbo.
*Tyres :* Pirelli.
*Technical and administrative directors :*
Alex Hawkridge, managing director.
Rory Byrne, chief engineer.
Roger Sliman, team manager.

### Drivers

**Derek Warwick**
born 27/08/1954, Alresford (GB)
Best result since first GP (Italy 1981) : 10th in Italy 1981 and Germany 1982.
Best result in 1982 : 10th in Germany.
Contested 13 GPs.

**Teo Fabi**
born 09/03/1955, Milan (I).
Best result since first GP (San Marino 1982) : no finishes.
Best result in 1982 : no finishes.
Contested 7 GPs.





## TYRRELL RACING ORGANISATION

Address :
Long Reach,
Ockham, Woking,
Surrey GU23 6PE,
Britain.

21 wins since first World Championship race, Canada 1970 (scored 10 wins with private team run from South Africa 1968).
1 win in 1982 : Caesars Palace.
*Chassis :* Tyrrell 011 in aluminium.
*Engine :* V8 Cosworth DFV, 2993 cc, atmospheric.
*Tyres :* Goodyear.
*Technical and administrative directors :*
Ken Tyrrell, managing director and team manager.
Maurice Philippe, chief engineer.

### Drivers

**Michele Alboreto**
born 23/12/1956, Milan (I).
1 win since first GP (San Marino 1981).
1 win in 1982 : Caesars Palace.
Contested 26 GPs.

**Slim Borgudd**
(until Long Beach)
born 25/11/1946, Karimaa (S)
Best result since first GP (San Marino 1981) : 6th in Britain 1981.
Best result in 1982 : 9th in Brazil.
Contested 10 GPs.

**Brian Henton**
(from San Marino)
born 19/09/1946, Donington (GB)
Best result since first GP (Britain 1975) : 7th Germany 1982.
Best result with Tyrrell in 1982 7th in Germany.
Contested 20 GPs.









## WILLIAMS GRAND PRIX ENGINEERING

Address :
Unit 10, Station Road
Industrial Estate,
Didcot, Oxon.,
Britain.

16 wins since first World Championship race, British GP 1972 (ran a private team from Spanish GP 1969).
1 win in 1982: Swiss
*Chassis :* Williams FW07D in aluminium until Long Beach, Williams FW08 in aluminium from Belgium.
*Engine :* V8 Cosworth DFV, 2993 cc, atmospheric.
*Tyres :* Goodyear.
*Technical and administrative directors :*
**Frank** Williams, managing director and team manager.
Patrick Head, chief engineer.
Frank Dernie, engineer.

### Drivers

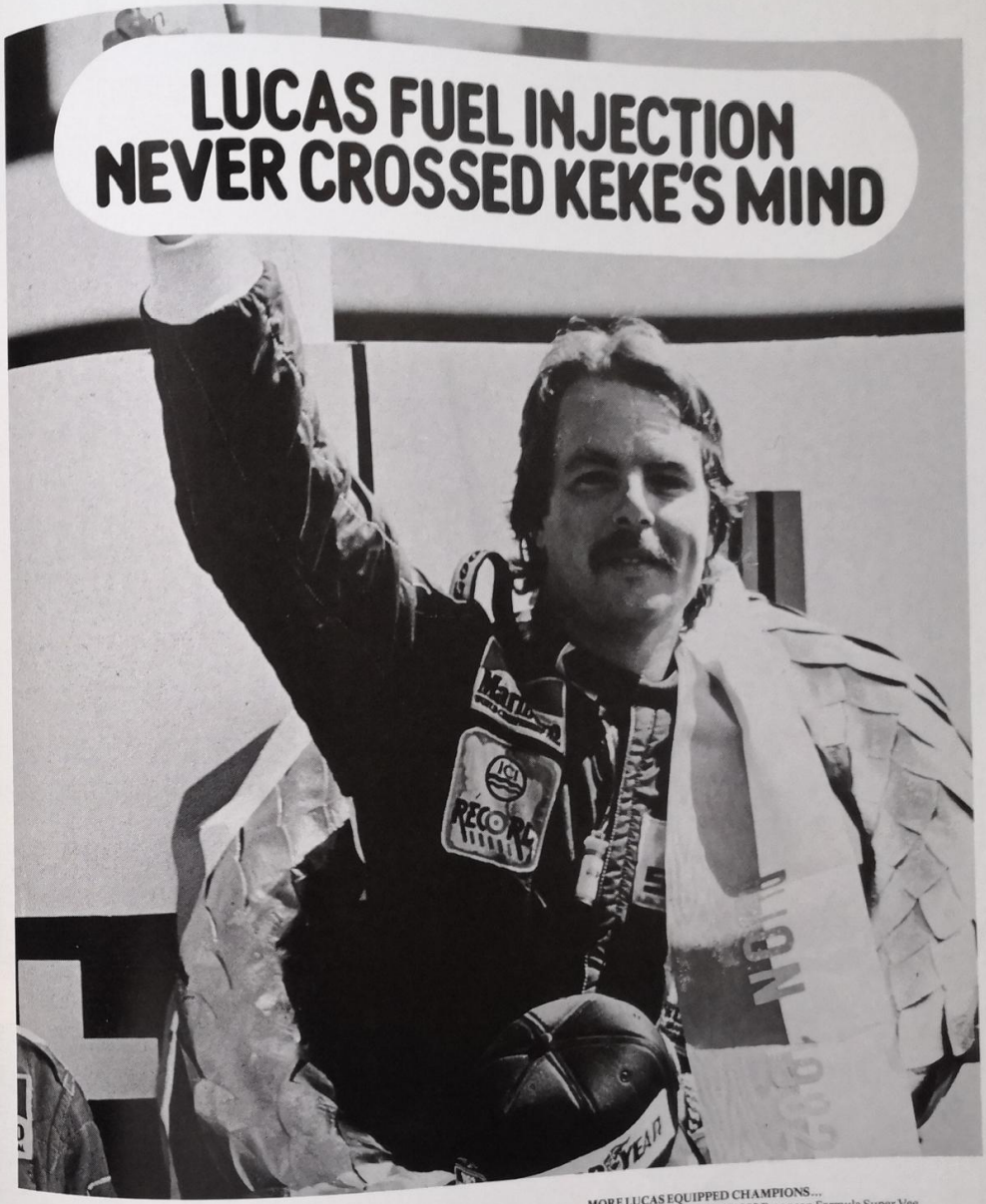
**Carlos Reutemann**
(until Brazilian GP)
born 12/04/1942, Santa Fe (ARG)
12 wins since first GP (Argentine 1972).
Best result in 1982 : 2nd in South Africa.
Contested 146 GPs.

**Keke Rosberg**
born 06/12/1948, Stockholm (S) - Finnish citizen.
1 win since first GP (South Africa 1978).
1 win in 1982 : Swiss.
Contested 52 GPs.

**Mario Andretti**
(Long Beach GP)
born 28/02/1940, Montona (I) - American citizen.
12 wins since first GP (USA 1968).
Best result with Williams in 1982 : did not finish.
Contested 128 GPs.

**Derek Daly**
(from Belgian GP)
born 11/03/1953, Dublin (IRL).
Best result since first GP (British 1978) : 4th in Argentina and Britain 1980.
Best result with Williams in 1982 : 5th in Detroit, Holland and Britain.
Contested 49 GPs.

# LUCAS FUEL INJECTION NEVER CROSSED KEKE'S MIND



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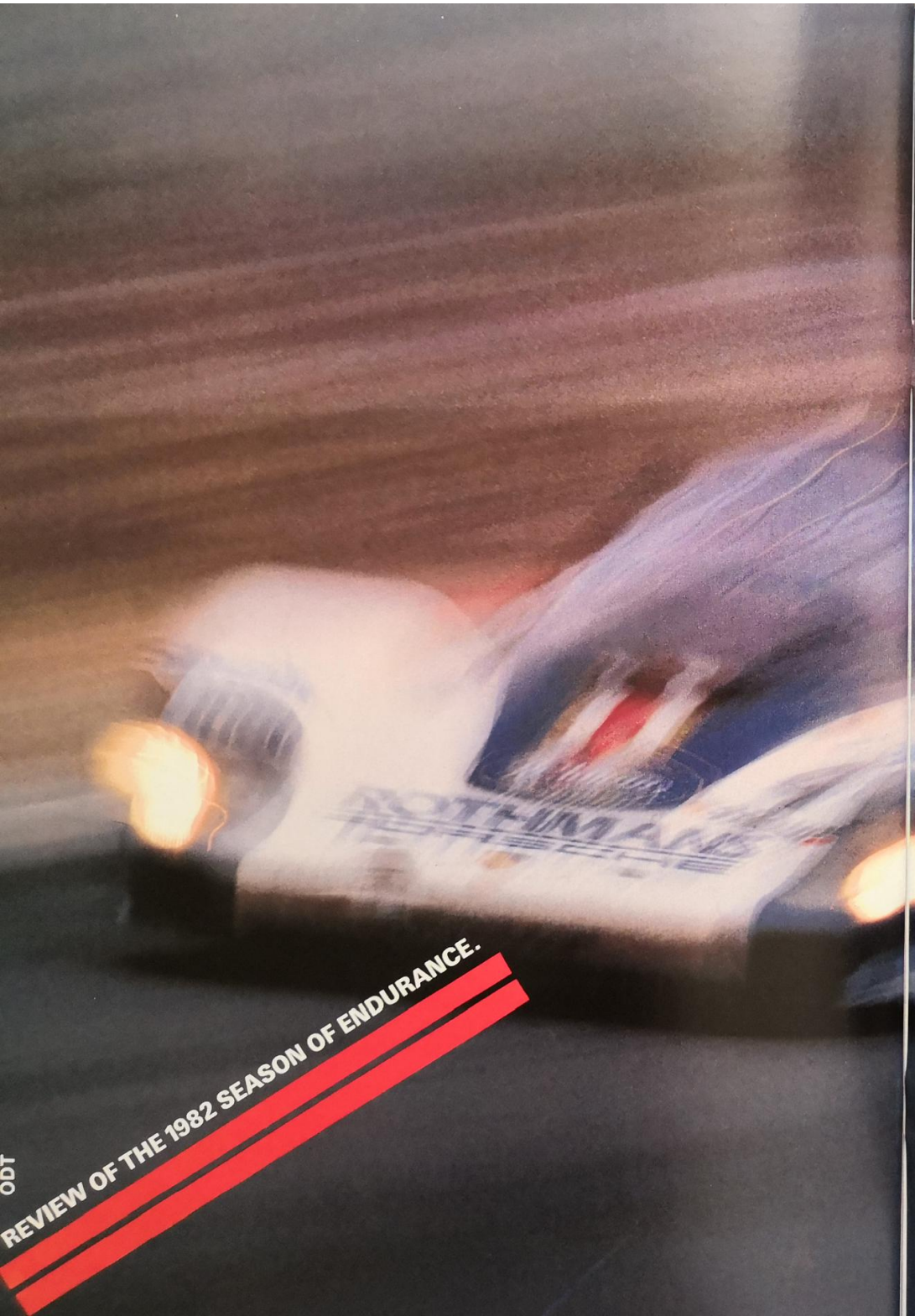
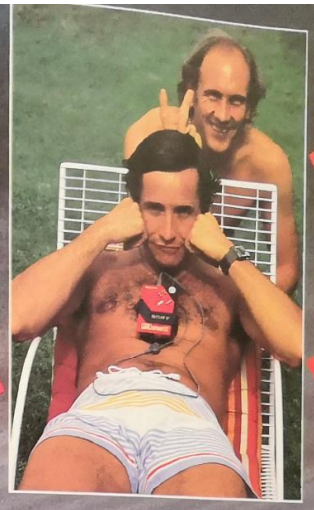


REVIEW OF THE 1982 SEASON OF ENDURANCE.



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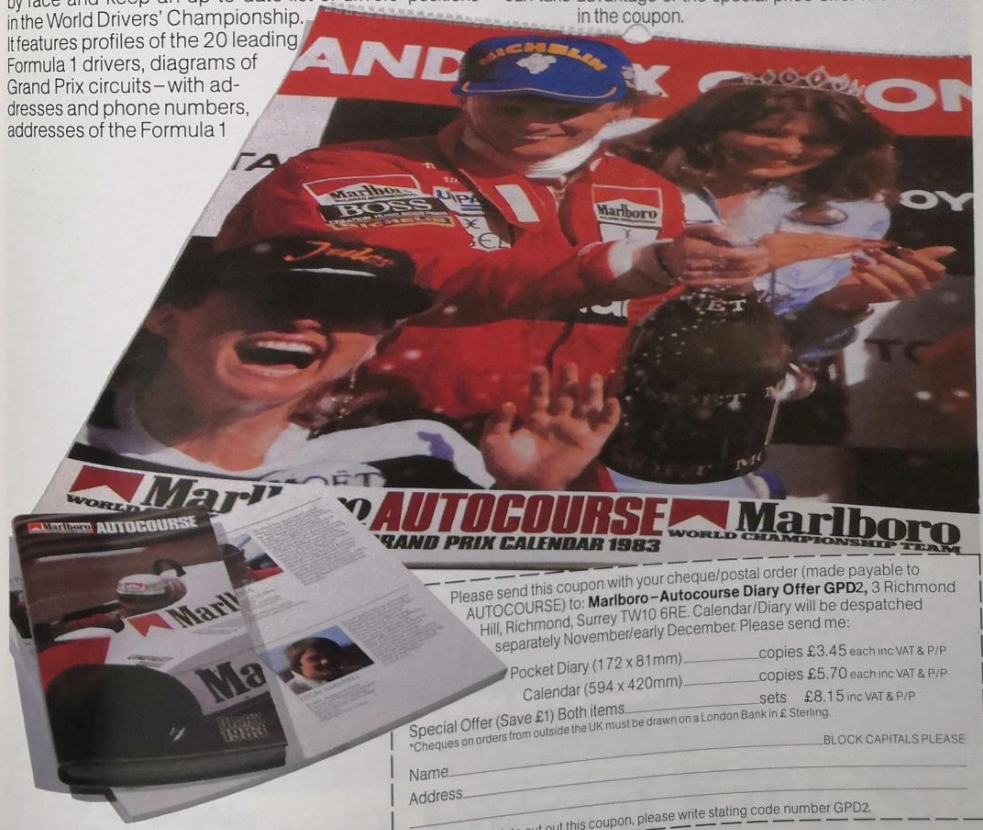


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